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A PRELIMINARY REPORT ON  
LAND-USE FOR ILLINOIS  
WITH REFERENCE TO PROBLEM LANDS

(Revised November 14, 1934)

BY

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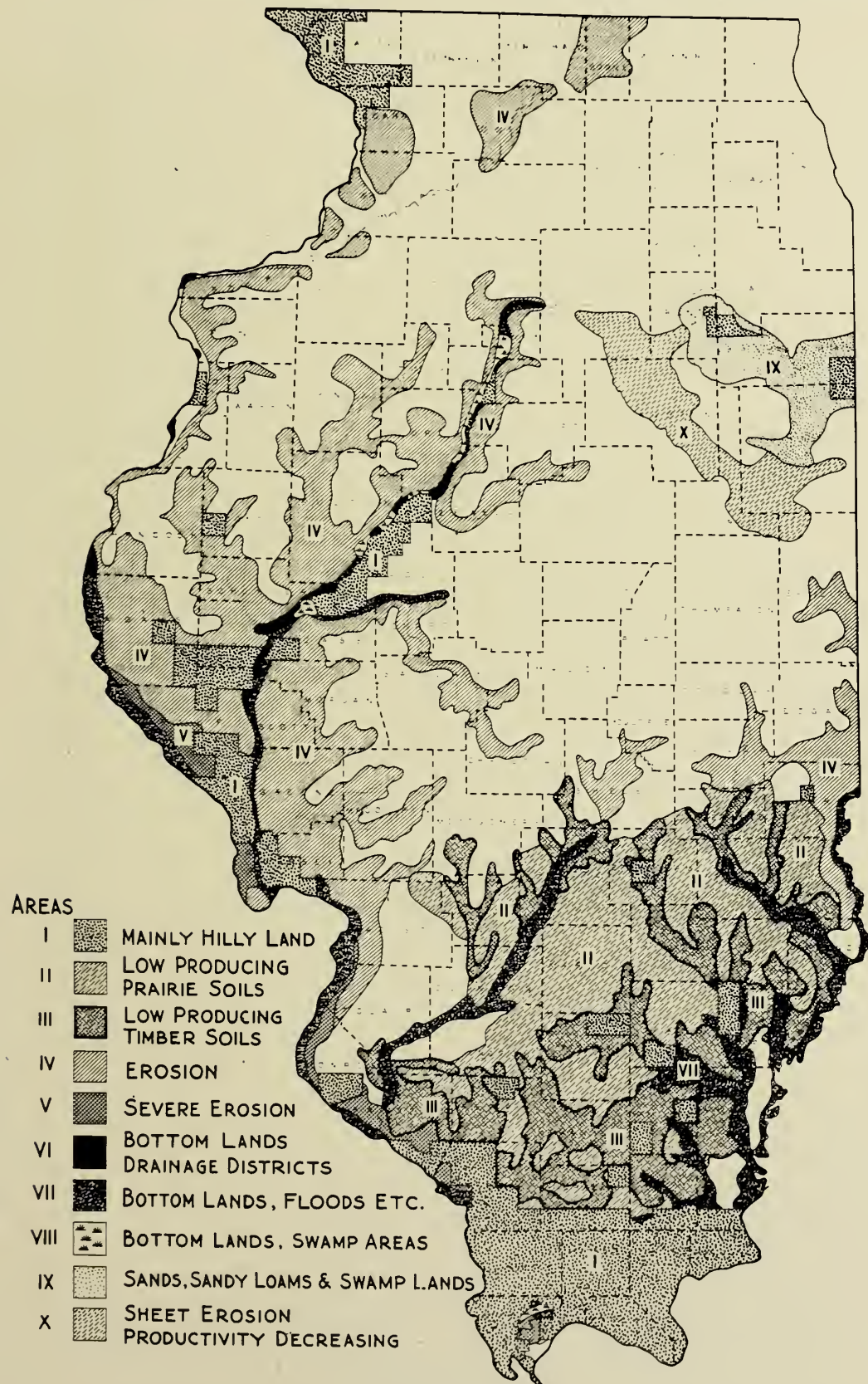
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# ILLINOIS LAND-USE PROBLEM AREAS



ILLINOIS LAND PLANNING CONSULTANT, NATIONAL RESOURCES BOARD.  
 (DATA FROM ILLINOIS AGRICULTURAL EXPERIMENT STATION.) -





A PRELIMINARY REPORT ON LAND-USE FOR ILLINOIS  
WITH SPECIAL REFERENCE TO PROBLEM LANDS

-Introduction-

In this report an attempt has been made to determine for the National Resources Board, the extent and character of problem areas in rural land use in Illinois and to suggest where possible, a means of obtaining a desirable adjustment for higher and more efficient use.

In Illinois, it is generally recognized that certain agricultural sections of the state under the present system of use are in need of adjustment to enable the people living in these areas to derive from them the greatest return from their natural resources and their highest economic and social advantages.

In this preliminary report the problem area which is a group of soil types, has been used as the working unit. Since this report has been prepared on a state basis it was impossible to develop the detail which would be necessary if the individual soil type had been used as a working unit. However, at a time when a more detailed study of smaller areas can be made the individual soil type may prove to be the ideal working unit.



It is the purpose of this report to attempt to generally locate and describe areas where adjustments in land-use appear to be necessary to establish a sound farm economy. The problem areas were located on the basis of such factors as low productivity, serious or destructive erosion, inadequate drainage, overflow, economic and social conditions. It should be recognized that undesirable features which need adjustment do not prevail in all sections of any given problem area, but that one and/or a combination of these features are prevalent over the major portion of the designated areas.

In outlining the problem areas it is recognized that parts of the state other than those which are herein given problem designation have problems of low soil productivity, poor drainage, erosion, economic and social conditions of a varying degree of intensity. However, at this time the need for adjustment appears to be less urgent than in the areas outlined.

The information and suggestions which are presented in this report are not the ideas of one individual, but were obtained from summarizing years of research, experience and observations of the University of Illinois Agricultural Experiment Station, U. S. Department of Agricultural Economics,



U. S. Forestry Service, Illinois Department of Conservation, Illinois Natural History Survey, Illinois Geological Survey, Illinois State Planning Board, conferences and "round table" discussions with members of the above-named institutions and departments.



## PROBLEM AREAS

### AREA I

#### LANDS TO BE CONSIDERED FOR FORESTS, GAME REFUGES AND RECREATION AREAS. MAINLY HILL LAND.

Area I is located mainly in twelve counties in the southern end of Illinois. However, there are townships and groups of townships scattered throughout the southern third of the state, along the Illinois and Mississippi rivers and in the Kankakee watershed, which have also been indicated as Area I.

In most instances this Area is characterized by rough, broken and eroding lands of a low productive level. However, those areas in Mason, Tazewell, Iroquois and Kankakee counties are exceptions, being generally low producing sandy and/or swampy areas.

Area I includes 3,292,300 acres of which 34% is cropped land, 21% pasture and 45% is in woods and other lands. Generally in this area 50% or more of the land in each township is of such a nature, that is rough eroding lands or sandy and/or swampy, that the lands should not be cultivated.

Generally, the rough, eroding and sandy lands have been designated as forest, upland game or recreation areas. The swamp and bottom land areas were designated as forest areas, migratory water fowl and recreation areas.





It was the general opinion of those present in conferences and round table discussions that the particular use which was designated will prove to be the highest economic and social use for these lands.

The soil types that have been indicated as forest lands in Jackson, Williamson, Saline, Gallatin, Johnson, Pope, Hardin, Alexander, Pulaski and Massac counties by the U. S. Forestry Service are the same as those types discussed in Problem Area III.



## AREA II

### LOW PRODUCING TIGHT CLAY PRAIRIE SOILS

Problem Area II is recognized as being the "tight clay" lands of Southern Illinois. This problem area follows generally the same boundary lines as outlined on the Provisional Soil Map of Illinois (Plate I) for "gray soils with impervious non-calcareous subsoils." Also, it will be noted that this area is very similar to that indicated as "red top, pasture and meadow land" on the Generalized Land-Use Map (Plate II) as prepared by the Illinois Agricultural Experiment Station.

The soils of this section of the state are very old, and have been subject to weathering and leaching for many centuries. These long continued processes have resulted in detrimental effects, in so far as productiveness is concerned. Fine clay particles from the upper horizons of the soil have been washed down and have accumulated in the subsoil forming a tight, slowly permeable layer in the subsoil that interferes greatly with the drainage. At the same time, lime and other valuable materials have been washed out leaving the upper layers of the soil in an acid condition which is very detrimental to productiveness.



In addition to the deterioration brought about by the natural agencies, man has contributed his share to the destruction of the soil by his practice of continuous cropping without regard to the consequent removal of plant food. When these soils were first cropped they produced satisfactory yields but their producing capacity rapidly declined as is always the case with soils of this nature.

Certain soil types in this area produce satisfactory crops during seasons which are climatically favorable, when properly treated and managed as has been proven by experiment field results and farmers' experience. The treatment required to attain a satisfactory yield level involves a cash outlay which has discouraged the general acceptance soil improvement program. Crop failures in Area II (Land-Use Map) is more frequent than on the more productive soils.

The most extensive soil types found within this area are, according to the Illinois Classification, Rinard and Cisne (Cory)<sup>1</sup> silt loams (Prairie soils) and Loy and Wynoose (Vigo)<sup>1</sup> silt loams (timber soils).

Rinard silt loam is a deep gray silt loam on tight clay; topography, nearly level; the surface drainage is moderately slow and because of a nearly impervious tight clay subsoil the subsurface drainage is very slow; the productive rating of this soil type is very low.

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<sup>1</sup>Refers to probable correlation with United States Bureau of Soils Classification.



Cisne (Cory)<sup>1</sup> silt loam is a gray silt loam on tight clay; topography, nearly level, however having slightly more slope than Rinard silt loam. The surface drainage is moderately slow and because of a nearly impervious tight clay subsoil the subsurface drainage is very slow. The productive rating is very low.

Loy silt loam is a light gray silt loam having nearly level topography. The surface drainage is slow and because of a very compact and plastic clay subsoil the subsurface drainage is very slow. The productive rating of this soil type is very low. The natural vegetation is a hard wood timber which makes a very slow growth.

Wynoose (Vigo)<sup>1</sup> silt loam is a yellow gray silt loam on tight clay having a nearly level topography. The surface drainage is moderately slow and because of a very compact and plastic subsoil the subsurface drainage is very slow. The natural vegetation is hardwood timber which makes a very slow growth. The productive rating of this soil is low.

In general because of slightly more slope the Cisne (Cory)<sup>1</sup> and Wynoose (Vigo)<sup>1</sup> silt loams have slightly better surface drainage than the Rinard and Loy silt loams. However, in all of these soil types the soils are usually wet and cold in the spring and due to the fact that the water holding capacity of these soils is low and moisture cannot move up from below the tight clay they become droughty during dry summer months.







Slick spots, commonly known as "scalds" occur throughout the area, especially within the soil types developed on nearly level to gently undulating topography. These areas are characterized by their unproductiveness and difference in moisture condition from that of the surrounding land. When the soils become thoroughly soaked they tend to remain wet and offer little resistance to pressure. When dry, the subsoil becomes very hard. Slick spots develop where the leaching of materials, chemically known as bases, from the loess is interrupted because of the presence of a slowly pervious layer formed in the old weathered drift below. The bases are thrown out of solution and, as the water evaporates, they accumulate in the soil. This accumulation of bases produces an excess of soluble salts which has given the soil an extremely poor physical condition and created an unbalanced plant-food situation.

Because of the extent of these soils and the problems of low soil productivity and slow drainage which this area presents, there has been considerable time and research expended in attempts to find a means whereby these soils can be developed to a relatively higher productive level.

Results<sup>2</sup> from the Illinois Soil Experiment Fields indicate that the different soil types in Area II respond similarly to

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<sup>2</sup> See Table IV



system of soil treatment, but the degree of response varies. All of the soil types show a marked response to limestone. Probably no system of soil treatment without limestone would attain a high productive level. Farm manure has given good results on these soils, but without limestone the productive level remains so low that it is doubtful whether a system whereby farm manure alone is used would represent a practical system of soil treatment.

Crop residues alone have little effect on crop yields, however a system of crop residues and limestone bring about marked increases in crop yields. Often the results are comparable to the manure and lime system (Table IV).

The present productive level as compared to the potential productive level of the soils in this area (Chart I), suggests that a large percentage of the land in Area II is not being utilized to its highest economic advantage. Only the more progressive farmers who are financially able to pay the initial cost of a practical system of soil treatment are following a system of farming which utilizes land to its best advantage.

Dairying and poultry raising have been developed extensively in scattered sections of this area and are important items in contributing to the farm income. (Plate XVI). In 1929 on many of these farms, the gross income per acre was



less than \$10.00. (Plate III). For the whole area, the average gross income was less than \$1,500.00 per farm.

This problem area, that is the area of gray soils with impervious non-calcareous subsoils, covers approximately 4,249,800 acres. Of this area, according to the 1930 Census Report, it is estimated that 62% is in cultivated crops; 27% in pasture, 6% in woods, and 5% devoted to other purposes. (Table I).

The valuation of land (Plate V) and the value of farmer's dwellings per farm (Plate VI) together with the gross income per farm, may be used generally to indicate the standard of living of the farmers in this area. According to the 1930 Census Report, land values are predominantly low. The land value per acre on the greater portion of this area was less than \$30.00. In a few townships, the range of valuation was between \$30.00 and \$60.00 per acre and in a few townships over \$60.00.

The value of farmers' dwellings per farm (Plates VI and VII) is generally low in this area. In a few townships, the valuation of dwellings per farm was \$250.00 or less. In the majority of townships in the area, the value of the farmers' dwellings ranged from less than \$1,000.00 to \$2,000.00.





This relationship between valuation, size of farm, and number of people per farm indicates that a large number of people in this area are operating farms on a small amount of capital. This low capital investment apparently has not been effectively offset by labor expended in this area. The low gross income per acre in 1929 (as mentioned on page 10) demonstrates the validity of this statement.

Tax delinquency appears to be rather high in this area. Data obtained by the Civil Works Administration in eighteen of twenty-seven counties in Areas II and III show that a range of 1.2% to 18.7% of the total farming area is tax delinquent. (Plate VIII).

The Department of Research and Statistics of the Illinois State Teachers Association made a study of the ability of the various counties to support education. The counties were rated on the basis of three items: (Plate IX)

1. Assessed valuation per elementary pupil in average daily attendance, grades 1 to 8 inclusive;
2. Assessed valuation per elementary teacher employed in teaching the above grades;
3. Assessed valuation per school census child (ages 6 to 21).

Classified on this basis, the counties in this area ranked low in ability to support education.





U. S. Census data for 1925 and 1930 (Plate X) show that part ownership of all harvested crop land has increased markedly during the five year period. This same trend is also noted for tenants and part owners. (Plates XI and XII). The U. S. Census data for 1910 to 1930 (Plates XIII and XIV) indicate the results of the above-mentioned tendency. Large numbers of people have migrated from this area since 1910. The number of people on farms is more than 50% of the total population of the area. (Plate XV).

The data just presented might indicate that land under inefficient management has been turned over to more capable farmers who have not only retained their own land, but are also farming additional land. This change has probably come about in order to meet the fixed expenses on the land and to provide a better living for the family on land that is rapidly being drained of its small store of plant food. Under the present system of farming a readjusted system of agriculture will be necessary to maintain a desired standard of living.

#### SUGGESTED LAND-USE READJUSTMENTS FOR AREA II (3a)

It is recognized that in Problem Area II there are problems of low productivity and inadequate drainage which cause economic



and social conditions of such a complicated nature that it is difficult to make adequate, well defined suggestions for a readjustment.

At present about 62% of the total area is in cultivated crops. Because of the low gross income per acre (Plate III) of cropped land it is generally considered that the majority of the cultivated land (50%, or more) should be in leguminous and/or non-leguminous pasture, hay, seed, and soil improvement crops; that is, divert the system of farming from a predominantly mixed type (Plate XVI) to a livestock system of farming. Results from the Illinois Soil Experiment Fields indicate that a manure and lime system of farming (a livestock system) should be followed.

However, such a system may not be practical under all conditions. Productivity levels may be raised perceptively with a residue and lime system of farming. Such a system will probably be necessary on part of every farm as it would be a practical impossibility for every farmer in the state to raise livestock in large enough numbers to produce a sufficient amount of manure required to cover all of the cultivated lands.

It is agreed that this suggestion is not the entire solution to the situation because of the limited distribution of rainfall during part of July and August and the



water holding capacity of the soil being limited, causes pastures to dry up. Often it is necessary to supply other feed for the livestock to carry them over this dry period.

However, as the program for this area progresses, and land values and overhead expenses will justify such a program, a liming program should progress to the pasture lands in an attempt to overcome the above mentioned difficulties. For instance, the pasture lands might be limed in order that it will be possible to grow legumes extensively and develop a system of pasture succession. For example, a field of sweet clover for early pasture and a field of lespedeza or a combination of sweet clover and lespedeza might be coming along to be ready when the sweet clover pasture is exhausted. If a permanent bluegrass pasture can be established it might be used intermittently in such a system when other pasture crops are exhausted. These crops could be supplemented by other grass or legume crops so timed as to fit in when needed.

It is not the intention of those making suggestions for readjustment in this area, that the livestock raised here should be finished in the area, but feeder stock, cattle and sheep are to be transported to grain producing regions and finished for market. From data presented on Plate XVI it is





shown that approximately 58% of the farm income in Area II is derived from livestock and livestock products.

The nearly level lands, especially if the drainage is inadequate, are better adapted to the production of grass crops for seed than grain crops, in some instances wheat being a possible exception. For this reason these are the lands that should be diverted from mainly cultivated crops to a rotation of pasture crops as mentioned above. The grass should be used for pasture, hay, seed and soil improvement. Red top seed production is one of the chief money crops on this type of land in the problem area. The majority of the red top seed produced in the United States is grown within this general region. Red top seed production should be continued in this area according to market demands, but under a system of farming in which it will be possible to rotate red top with pasture crops such as mentioned in a previous paragraph.

The more productive land of the area should be devoted to the production of grain for the livestock. Bottom lands are the most productive, but are not well enough distributed to permit each farm to have its share of productive land; therefore some areas of Cisne (Cory)<sup>1</sup> silt loam and Wynoose (Vigo)<sup>1</sup> silt loam must be kept in cultivation. Illinois Soil Experiment Fields results indicate that the potential productive level of these soils, using such soil amendments as manure





and limestone, is well above that of the untreated soils.

(Chart I).

These results indicate that the productivity under a livestock system of farming in this area is at a higher level than a system in which soil amendments are not used. However, because of the cost of treatment, these amendments are used only by the more progressive farmers. Since only a comparatively few farmers are able to finance a liming program, it seems only appropriate to suggest here that a project should be developed whereby limestone could be supplied to these less fortunate farmers at a very small cost through the use of relief labor. It is recognized that more extensive research and projects should supplement the present data on pastures before the suggested changes are adopted.

It is recognized that throughout this area there are scattered small tracts of rough land, (too small and isolated to show on map), of such a nature as to be unsuited for either cultivation or pasture but have a potential value for forest use.

In connection with a pasture program, with small areas of timber scattered throughout the section, it is suggested that in some instances upland game production might become a factor in supplementing the farm income.



Grazing and soil improvement alone probably are not the solution to the problem in this area, but along with the enlargement of supplemental practices as growing red top for seed, poultry raising, dairying, and upland game it may be possible to overcome the existing problem of low production and improve the economic and social conditions.



### AREA III

#### LOW PRODUCING TIMBER SOILS WITH ROLLING TO ROUGH TOPOGRAPHY

Problem Area III which lies in the southern third of Illinois, is characterized in general by low producing soils which vary in topography from gently rolling to rough eroding lands.

The soils chiefly found in this area are Hoyleton (a prairie soil) and Walton, Bluford (Gibson)<sup>1</sup>, Ava (Memphis)<sup>1</sup>, and Clement silt loam (Princeton).<sup>1</sup> (Timber soils).

Hoyleton silt loam is a gray silt loam on orange mottled tight clay. The topography is gently rolling; surface drainage, moderate and subsurface drainage is very slow. The productive rating is low on untreated land, but the soils responds to treatment with manure and limestone. (Chart I). On this type of soil there is slight sheet erosion when the land is under cultivation.

Walton silt loam is a yellowish gray silt loam on orange mottled tight clay. The topography is rolling, surface drainage is moderate and subsurface drainage is moderately slow. Under continued cultivation sheet erosion will become serious. The productive rating is moderately low on untreated soils. This soil type responds to soil treatment using manure and limestone. (Chart I).





Bluford, (Gibson)<sup>1</sup> silt loam has moderately rapid to good surface drainage, but the underdrainage is relatively slow. Under cultivation these soils are subject to sheet erosion, unless protected at all times by growing crops.

Ava silt loam (Memphis)<sup>1</sup> has rapid surface drainage and moderately rapid subsurface drainage. These soils are mapped on the rolling lands of the area. Under cultivation these soils are subject to severe erosion unless protected by growing crops. Soil treatment is effective on this type of soil. Because of being subject to severe erosion under cultivation, vegetation should be kept on the surface as much as possible to give protection against erosion, particularly in winter and spring.

The Clement (Princeton)<sup>1</sup> silt loam soils have rapid surface drainage which is accompanied by destructive erosion when the land is cultivated. The erosion hazard presents a serious problem in the use of this land for farming, however, the soils respond to soil amendments and when limed produce good stands of sweet clover and alfalfa.

In Illinois there are 3,125,000 acres of land that is classified as the soil types just described. It is estimated that Problem Area III includes 1,645,000 acres of this kind of land and 1,480,000 has been included in Problem Area I



as proposed forest areas. According to the 1930 U. S. Census Report 63% of Area III is under cultivation, 27% in pasture, 5% in woods and 5% devoted to other uses. (These figures are estimated from U. S. Census data on sample townships that were predominantly of soil types typical of this area).

(Table I).

In Problem Area III there are three University Soil Experiment Fields, Enfield, Unionville and West Salem. All of the soils in this area are acid and low in organic matter and nitrogen. The soils having more open subsoils will grow good alfalfa and sweet clover following treatment with limestone. The soils are naturally low in productivity, however, the results from the Illinois Soil Experiment Fields indicate that they respond to manure and lime treatment and in some instances crop residues and lime have given marked results.

(Table V).

Generally the present use of land in this area is mixed farming, that is; - (a) general farming, (b) red top production, fruit growing and poultry raising. (Plate XVI).

The Federal Census for 1930 indicates that the valuation of land in this area is little above that in Area II (Plate V). However, there is a larger percentage of the area where the value of land per acre in 1930 was between \$30.00 and \$60.00.



The valuation of farmers' dwellings is generally low. (Plate VI). The majority of dwellings are valued below \$1,000.00, but a greater proportion of them are valued above \$1,000.00 than in Area II.

Valuation of land and buildings per acre (Plate VII) shows a range, from \$0.00 to \$120.00. Nevertheless, the most values are within the \$30.00 to \$60.00 range.

The average size of farm is about 110 acres (Plate XVII). The average size of the farm family is larger here than in Area II, being approximately 4.5 people (Plate IV). The gross income per farm was less than \$1,000.00 in a large portion of this area, but the range of income was greater than in Area II.

Due to the close interrelationship between Problem Areas II and III it has been impractical to separate the tax delinquency data, therefore the same figures are being given for both areas. Tax data from eighteen of the twenty-seven counties in Area II and III show that there is a range in tax delinquency on the total farm lands from 1.2% to 18.7%. (Plate VIII).

The rank in ability to support education (Plate IX) is low over a large part of this Area III, being similar to that in Area II.

There has been a migration of people out of the area during the past two decades, (Plates XIII and XIV) but this





movement has not been so marked as in Area I. In some sections there has been a marked increase in population during this period. This increase has been concentrated largely in Franklin county and has been the result of the development of the coal mining industry rather than to any improvement in agricultural technique or conditions.

The map showing the per cent of population on farms (Plate XV) indicates that there is relatively lower concentration of people on farms over a large part of this area than in Area II. This is, no doubt, the result of local conditions which have been favorable for the development of industrial centers which have enabled many people to gain a livelihood away from the farm.

#### SUGGESTED LAND-USE READJUSTMENTS FOR AREA III (3a)

Because of the low productivity and erosion hazard of the soils, it seems that one of the major adjustments in this region should be a change from mixed farming to a system of livestock farming.

The moderately rolling, better drained lands not subject to severe erosion, should be used to produce hay and grain crops as winter feed for the livestock. The bottom lands in





this area however, are more productive than most of the uplands and perhaps a major part of the grain necessary to feed livestock will be grown here, using the uplands for pasture and hay production. In general, a cropping system such as suggested for Area II, might be used for this area.

It is suggested that the steeply rolling land which is not now in timber be reforested as a more efficient control of erosion. It is generally assumed that wood lots on the poorest and steepest land would be the most practical use of the land and could be made a source of farm income.

Poultry raising and poultry products are at present supplying an appreciable part of the farm income. Approximately 15% of the farms in this area are classed as poultry farms. This natural trend toward poultry raising might well be encouraged and directed as justified by market conditions, farm needs, and adaptation under a readjusted system of farming.

Dairying and dairy products are finding an increasingly important place in supplementing the farm income. Dairying should be encouraged in sections where sufficient feed and forage crops can readily be produced and in so far as market conditions demand.

It is suggested that upland game, such as quail and prairie chicken breeding and refuges, might become a factor on some farms as a means of supplementing the farm income.



A livestock system of farming is not the entire solution of the problems in this area, but these along with poultry raising, dairying and timber production, economic and social conditions might possibly be improved.

At the present time there have been no experiments completed in this state to prove or disprove the validity of the suggestions made for this problem area. At Dixon Springs, in Pope County, a Pasture-Erosion Demonstration Project is now being planned on lands which are similar to the rougher lands of this area. It is probable that the results of this project will give an important lead as to the soundness of the above suggestions.



#### AREA IV

#### AN AREA OF GENERALLY PRODUCTIVE SOILS THAT ARE SUBJECT TO EROSION

Area IV (See Land-Use Map) is located primarily in the north two-thirds of Illinois on the Illinois and Mississippi river watersheds, and their tributaries. Also, two or three small areas of the east side of the state.

Problem Area IV contains approximately 3,420,500 acres of rolling to rough hilly land, which if under cultivation is subject to serious erosion. Of the total tracts, it is estimated that 57% of the land is under cultivation; 36% is used for pasture, (this figure includes cultivatable pasture and wooded pasture land); and 2% is in woods, not pastured. Land in farms other than those classified covered a total of 5% of the area. (Table I).

It will be noted on the Provisional Soil Map for Illinois, that the problem area as outlined, corresponds closely to the area of brownish yellow gray soils with non-calcareous subsoils. (Plate I). It compares also in a more general way to those areas shown on the Soil Erosion Map as being subject to serious erosion. (Plate XVIII). Included in Area IV are small tracts that do not have land-use problem conditions and have not been indicated on the map because of their limited extent.





The soil types of predominant importance are the Clinton and Knox silt loam series.

Clinton silt loam is the more extensive type. It is a brownish gray soil with non-calcareous subsoil. The soil is not naturally of a high productive level, but responds satisfactorily to fertilizer treatment. Soil erosion in this area varies from slight to severe depending on the slope of the land.

The Clinton silt loam (steep phase) and Knox silt loam (steep phase) are subject to destructive erosion under cultivation and should be largely in pasture and timber. These types are found along the streams. The areas that are primarily steep phases of Clinton silt loam and Knox silt loam are scattered, but in the aggregate make up a considerable portion of this region. All townships with 50% or more of the land being of such a steep nature as to be unsuited for agricultural purposes, have been reported on by the U. S. Forestry Service as being desirable forest lands.

According to the 1930 Census data, the gross income per acre in Area IV is generally from \$10.00 to \$20.00, while in some of the more favorably located parts it is as high as \$25.00 per acre. (Plate III). The average range in size of farm is from 120 acres to 200 acres, or an average of 140 acres. (Plate XVII). The average gross income per farm ranges from \$2,000.00 to \$2,500.00.



Land values range from less than \$30.00 per acre in some of the rougher townships to \$90.00 per acre (Plate V) in some of the townships which are more favorably located with reference to markets. The value of dwellings in the majority of townships ranges from \$1,000.00 to \$2,000.00, but in the better soil areas the values go as high as \$4,000.00. (Plate VI).

There is a range of population of 3.8 to 5.2 persons per farm (Plate IV), or an average of 4.6 persons per farm.

There has been a slight net movement of population from this area (Plates XIII and XIV). However, the movement has not been so marked as in Areas II and III.

Tax delinquency data in this area is so incomplete that no very significant interpretation can be attached to it. For the few counties reported, the range in tax delinquency is from 3.7% to 40% of the total farming area.

#### SUGGESTED LAND-USE READJUSTMENTS FOR AREA IV (3a)

It has been pointed out that this is an area in which much serious erosion is found. In attempting to offer a solution to this problem it is suggested that the acreage of cropped land be reduced on the moderately rolling land. One of the most effective means of controlling erosion is a good rotation of crops, soil treatment practices and on the



steep eroding slopes keep the land in grass, forestry or other non-cultivated crops. Since this area is largely the livestock producing section of the state, more of the land might be in permanent pasture and forage crops. No change in size of farm is suggested; however, it is recognized that the reduction of cultivated acreage might have a natural tendency toward larger farms.

No definite data for this area are available on the amount of land now under cultivation, which should be devoted to other uses, but at least a 25% reduction of the present cultivated acreage has been suggested as a conservative estimate.

It is desirable that the cultivated land be limed then, hay crops and pasture should be given primary consideration. Such crops as red clover, sweet clover, and alfalfa should be grown where the soil reaction is such that these crops can be produced successfully. As a suggestion for a long time program, most of the farms in this area should be limed where such procedure is physically and economically possible.

It is suggested that consideration be given to soil erosion control, that is approved cropping systems, possibly strip cropping and terracing on the rolling lands that are at a productive level, which will justify the expense. This suggestion is made on the assumption that the maximum





population can be supported if as much of the productive land as possible should remain in cultivation. Soil erosion control is not now receiving attention in most of this area. In Woodford, Tazewell, McLean and Ford Counties the U. S. Soil Erosion Service is developing projects along the lines which have been suggested in this section of the report. However, it appears that if the program is to be successful, the people living in this area should be apprised of the various means of preventing soil destruction and methods of correction.

It will be noted on the problem area map that the Forestry Service has investigated several townships in which 50% or more of the land was better suited for forestry than agricultural purposes. There still remain areas of rough land along streams, that should be in timber. Also, throughout Area IV there are tracts which have been cleared of timber for the purpose of cultivation, but because of the erosion hazard should be reforested. These areas vary in size and distribution so that private development appears more advisable than public ownership. It is suggested that the State, County, and Federal Governments cooperate with land owners promoting an educational program to encourage forestry plantation on farms where public ownership does not appear advisable.





## AREA V

### AN AREA OF SEVERE EROSION

Area V (See Land-Use Map) is found mainly along the Mississippi river south of Hancock county. The area is characterized as being rough, broken lands, which under cultivation are subject to destructive erosion.

It is estimated that there are 270,000 acres in the area of which 60% is under cultivation, 23% is in pasture, 12% is in woods and 5% is used for miscellaneous purposes and waste land.

In addition to the 270,000 acres described as Problem Area V there is approximately 4,230,000 acres of similar lands scattered throughout the state. Most of the areas have been considered as tracts suitable for public acquisition for forestry development and recreational areas. These areas have been described briefly in Area I.

The lands in Area V are generally not as rough as Area I and a larger percentage may safely be retained in cultivation. Although the soils of the two areas are similar, Area V soils are more productive and better suited for continued cultivation. However, precautions must be taken to prevent destructive erosion.

London, 18th July 1884

My dear Mr. Darwin  
 I have just received your letter of the 17th inst. and am  
 glad to hear that you are still interested in the  
 subject of the origin of the species. I have been  
 thinking of writing to you for some time, but have  
 been so busy that I have not had time to do so.  
 I am now on a tour of inspection in the West of  
 England, and shall be home again in about a week.

I have been thinking of writing to you for some time,  
 but have been so busy that I have not had time to do so.  
 I am now on a tour of inspection in the West of  
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I have been thinking of writing to you for some time,  
 but have been so busy that I have not had time to do so.  
 I am now on a tour of inspection in the West of  
 England, and shall be home again in about a week.

Problem Areas I and V correspond to that area on the Provisional Soil Map of Illinois which is indicated as hilly, forest, orchard and pasture lands. (Area 16, Plate I).

The soils of the Clinton silt loam series in this area are derived from loess material six feet or more in thickness and were developed under good drainage conditions and forest cover. Under cultivation the steep phases are subject to destructive erosion. The soils are acid, however, legumes will grow satisfactorily after the applications of limestone. Some of the moderately steep slopes may be used to good advantage for orcharding. Under cultivation the rolling phases of Clinton tend to erode severely.

Ava (Memphis)<sup>1</sup> silt loam soils have excellent drainage, but under cultivation are subject to severe erosion. The soils of this series are desirable orchard soils.

Ava (Princeton)<sup>1</sup> silt loam (immature phase) is derived from deep loess, has an open subsoil and was originally timbered. A large portion of this type is now in timber. The areas of Ava (Princeton)<sup>1</sup> silt loam soils that are under cultivation produce good crops, however the type is subject to destructive erosion and in general should be in grass or reforested.

According to the U. S. Census data for 1930 the average gross income per acre for farms in this area ranges from



\$10.00 to \$20.00 (Plate III) and the gross income per farm ranges from \$1,500.00 to \$2,500.00. The wide variation in gross income per farm is explained by the fact that the size of farm varies from 100 to 200 acres. The type of farming is principally fruit growing in the major part of the area, supplemented with dairying, poultry raising and wheat growing.

#### SUGGESTED LAND-USE READJUSTMENTS FOR AREA V (4 - 3a)

This area is similar to Area IV in that the soils are subject to destructive erosion and most of the land should not be cultivated.

It is suggested that this land should be mostly in grass and as market conditions warrant apple and in some instances peach orchards should be developed. Because of the nature of the soils, that is, being derived from deep loess, rather steep slopes can be in permanent pasture or orchards if precautions are taken to prevent erosion from beginning. If some of the steep slopes are to be cultivated, the land should be strip cropped and cultivated not more than one year in four or five.

Areas subject to severe erosion under cultivation should be diverted to pasture or in some instances the land might be limed and seeded to alfalfa. Scattered throughout Area V are





soils from which the surface horizon has eroded to such an extent that grass will not make a satisfactory growth. These areas should undoubtedly be diverted to forests which will probably be the highest economic use of the land as well as prevent further destructive erosion.

Other suggestions on erosion control as presented for Area IV of this report, will apply to this area.

In general--erosion is more severe than in Area IV, because of more hilly topography, and a greater proportion of land should be used for grass, orchard and timber crops.



AREA VI

RIVER BOTTOM DRAINAGE DISTRICTS WHICH ARE IN DEFAULT ON BONDS

Problem Area VI is confined to bottom lands along the Illinois and Mississippi rivers. The area represents 104,570 acres of land in drainage and levee districts which are in default on bonds prior to 1932. Those districts which have defaulted on their bonds in 1932 and 1933 are not considered in this part of the report, since it is assumed that the default was caused by low farm prices and not to any unfavorable condition of land use. However, it is assumed that this statement will not hold for all districts and for that reason those districts which have defaulted since 1932 are being given mention later in this report.

When the accompanying list of drainage and levee districts was compiled it was noted that a few of the districts have had commitments for refinancing from the Reconstruction Finance Corporation. It is expected that some of the districts listed will reach an agreement on refinancing the bonded indebtedness and will be enabled to continue to be used for agricultural purposes, while other districts may possibly be abandoned as the case has been with the Chautauqua Levee and Drainage District in Mason County. From the information which was available for this report it is impossible to make a definite statement as



to the physical and financial condition of these districts other than that payment on bonds is in default prior to 1932.

Some of the districts have large undeveloped timbered areas, soils low in productivity, and, faulty engineering features such as inadequate levee protection, inadequate pumping facilities, and flood hazard which add to the difficulties of refinancing or reclaiming.

The following is a list of drainage and levee districts which have defaulted on bonds prior to 1932.



DRAINAGE DISTRICTS WHICH HAVE DEFAULTED ON BONDS PRIOR TO 1932.

| County      | District                       | Acres   |
|-------------|--------------------------------|---------|
| Brown       | Big Prairie, D. & L. D.***     | 1,869   |
| Carroll     | Carroll Co., D. & L. D. #1     | 3,330   |
| Cass        | Meredosia Lake, D. & L. D.*    | 4,000   |
|             | S. Beardstown, D. & L. D.*     | 7,275   |
|             | Valley, L. & D. D.             | 3,200   |
| Hancock     | Hunt, L. & D. D.               | 15,307  |
| Henderson   | Henderson Co., #1              | 7,682   |
|             | " " #2                         | 7,327   |
|             | " " #3                         | 2,710   |
| Mason       | Chautauqua, D. & L. D.         | 4,120   |
|             | Lynchburg, D. & L. D.          | 1,040   |
| Mercer      | Keithsburg, D. D.**            | 1,349   |
| Peoria      | Banner Spec., D. & L. D.       | 4,933   |
|             | Pekin-La Marsh, D. & L. D.     | 2,716   |
| Pike        | McGee Creek, D. & L. D.*       | 10,800  |
|             | Valley City, D. & L. D.*       | 4,989   |
| Rock Island | Drury, L. & D. D.*             | 4,873   |
| Schuyler    | Big Lake, L. & D. D.           | 3,500   |
|             | Coal Creek, L. & D. D.         | 6,700   |
|             | Crane Creek, L. & D. D.        | 5,200   |
|             | Kelly Lake, L. & D. D.*        | 1,053   |
| Tazewell    | Rocky Ford, D. & L. D.         | 1,615   |
| Woodford    | Marshall-Partridge, D. & L. D. | 3,252   |
| Total Acres |                                | 104,570 |

\* Commitments have been made by the Reconstruction Finance Corp.

\*\* Drainage District.

\*\*\* Levee District.





SUGGESTED LAND-USE READJUSTMENTS FOR AREA VI (3f)

Due to the uncertainty of conditions, which might be involved in refinancing or reclaiming the drainage districts listed, no recommendation can be made other than to state, that such districts as are now in default and which apparently do not warrant rejuvenation and refinancing, might be considered in regard to their adaptation for forestation or development as migratory water fowl preserves and possibly public fishing waters.



## AREA VII

### BOTTOM LANDS, SWAMP AREAS

This is an area of bottom lands along the major streams, which is subject to poor drainage and flooding in many cases.

There are organized drainage districts in parts of this area, many of which do not offer sufficient protection from flood because of inadequate levee protection, and/or ditches and pumping facilities.

Several drainage and levee districts were found not to be in default on outstanding bonds. Some have paid off the bonded indebtedness, but due to the high cost of maintenance, the ditches and levees have been neglected, leaving the ditches in very poor condition and the drainage is slowly reverting to its original condition. These particular districts have not been located on the problem area map.

At the present time large areas of the bottom lands are not suitable for cultivation and have remained in timber. The higher, better drained bottom land is now under cultivation.

With the present information on the bottom lands, it is not possible to make sound suggestions as to the future use or readjustments of these lands. However, because of soils low in productivity and the impracticability of drainage, much of this land will find its highest economic use for forestry, wild life refuges and recreation.

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AREA VIII

BOTTOM LANDS, FLOOD, ETC.

This is an area of low bottom and swamp lands which for the most part are covered with water and have no present agricultural value. These lands are found mostly along the Illinois river.

Parts of this area are now being maintained as migratory fowl refuges and other tracts of the area have been indicated by the U. S. Forestry Service as being desirable for further development.

The areas along the streams should be used as migratory fowl refuges and public fishing, provided future investigation indicates their value for such use.





## AREA IX

### SANDS, SANDY LOAMS AND SWAMP LANDS

The land-use problems presented in Area IX, are considered to be of less importance than those problems in the areas previously discussed.

Area IX is mainly sandy loams, sands and swamp lands located in parts of Iroquois, Kankakee, Grundy and Will Counties. It is estimated that the area contains approximately 559,000 acres of which 285,000 acres or 51% is now in organized drainage districts.

The main land-use problems in Area IX are drainage and an alkaline condition of the peat and peaty loam soils. The mobile character of the sands and sandy loams in this area present rather serious difficulties in keeping dredge ditches open, due to the fact that there is only a small amount of variation in topography throughout most of the drained area. It is possible that taxes and special assessments maintaining the drainage ditches may become a serious problem unless farm prices advance markedly over the range of the past ten years.

At the present time the land in this area is used mainly for producing grain crops. During the period 1920 to 1930 the U. S. Census data indicates that there has been a marked increase in the production of vegetables.

THE STATE

THE STATE OF NEW YORK

IN SENATE,  
January 1, 1901.  
REPORT  
OF THE  
COMMISSIONERS OF THE LAND OFFICE,  
IN RESPONSE TO A RESOLUTION  
PASSED BY THE SENATE  
MAY 1, 1899.  
ALBANY:  
J. B. LEECH, STATE PRINTER,  
1901.

The Commission on the Land Office,  
created by Chapter 100 of the Laws of 1899,  
has the honor to submit to the Senate  
this report in response to a resolution  
passed by the Senate May 1, 1899,  
relating to the Land Office.  
The Commission was organized on  
January 1, 1900, and has since that  
time been engaged in a study of the  
land problem in this State.  
The Commission has held numerous  
hearings and has received many  
suggestions from the public.  
It has also conducted extensive  
investigations into the various  
aspects of the land problem.  
The Commission believes that the  
land problem in this State is  
one of the most important  
questions which the Legislature  
has to consider.

AREA X

SHEET EROSION, PRODUCTIVITY SLOWLY DECREASING

Area X is located in parts of Vermilion, Iroquois, Ford, Livingston, La Salle and Grundy counties. The problems of erosion and a slowly decreasing productive level of the soils, presented in this area are not considered to be of as serious a nature as the land-use problems presented in the preceding areas. However, under the present system of farming the erosion problem and lower productive level is becoming increasingly serious.

The soils, mainly Clarence silt loam, have in the past, been relatively productive prairie soils, but because of a slowly pervious glacial till subsoil, erosion has progressed so far that the fertile surface soil has been entirely removed from many of the cultivated slopes. This condition has changed the once productive corn belt soil to one of a much lower productive level. In so far as plant food elements are concerned this type of soil is not deficient, but the physical condition of the subsoil limits its productive capacity. The poor physical condition of the subsoil cannot be improved, but by changing the present land-use it may be possible to raise the present productive level. Possibly the acreage of

— 30 —

[illegible]

grain should be reduced in this area and increase the acreage of red clover, sweet clover and alfalfa so that a larger portion of the land may be kept in pasture. This will necessitate increased livestock production. The soils in this area are only slightly acid and with a light application of lime, leguminous crops can readily be grown. With more of this land in pasture and leguminous crops the continued loss of the fertile surface soil will not only be retarded, but the productive level may be raised. On the steeper slopes, of 4% or more, terracing and strip cropping may be encouraged to check erosion.





## SUMMARY

The land-use problem areas are recognized as existing mainly in the south one-third and the west side of the state. The areas are, in general, confined to low producing slowly drained, rough eroding, drainage districts, flooding and over flow areas.

In Area I, counties and/or townships in which 50% or more of the land is of a low productive level, too rough, sandy or wet for agricultural use have been designated as desirable for public acquisition to be developed into forests, wild life refuges and recreational areas.

In Areas II and III a liming program has been suggested for the low producing slowly drained lands and the low producing rolling to rough timber lands. Such a program will give work to a greater number of people, make the land more productive and maintain an increased population. On the soils of these areas limestone is essential to produce pasture and hay crops and to raise the productive level of the soils for grain crops.

On the eroding lands of Areas IV and V, located on the west side of the state, a change of cropping systems has been suggested to check soil erosion.



CHAPTER

The first of the three main divisions of the subject is the history of the subject. The second is the theory of the subject. The third is the practice of the subject.

The history of the subject is the study of the development of the subject. The theory of the subject is the study of the principles of the subject. The practice of the subject is the study of the application of the subject.

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Problem Areas VI, VII and VIII are bottom lands and swamp areas subject to poor drainage and overflow. No solution was offered for these areas.



## LOCATION OF AREAS SUITABLE FOR SETTLEMENT OR CLOSER SETTLEMENT

No recommendations have been made, nor areas indicated as being suitable for settlement or closer settlement.

Studies at the Agricultural Experiment Station indicate that the trend should be toward larger, rather than smaller, farm units under the prevailing price-levels.

If smaller farms are necessary to absorb a larger population, there must be higher price levels or a lower standard of living will be forced upon the rural population.

In Illinois there is already a surplus of farmers, farm laborers and agricultural products. To increase the farm population will of necessity, cause more intensive cultivation of land which will only tend to aggravate the problem of overproduction.

THE HISTORY OF THE UNITED STATES OF AMERICA

CHAPTER I  
THE DISCOVERY OF AMERICA  
The first discovery of America was made by Christopher Columbus in 1492. He sailed from Spain in search of a westward route to the Indies. On October 12, 1492, he landed on the island of San Salvador in the West Indies. This event marked the beginning of European exploration and colonization of the Americas.

CHAPTER II  
THE EARLY YEARS OF THE COLONIES  
The early years of the colonies were marked by struggle and hardship. The settlers faced numerous difficulties, including lack of food, shelter, and protection from Native Americans. Despite these challenges, the colonies grew and developed, laying the foundation for the future United States.

CHAPTER III  
THE STRUGGLE FOR INDEPENDENCE  
The struggle for independence began in the 1760s, as the colonies fought against British rule. The American Revolution culminated in the signing of the Declaration of Independence in 1776. The war ended in 1781 with the British surrender at Yorktown, leading to the establishment of the United States as an independent nation.

CHAPTER IV  
THE CONSTITUTION AND THE EARLY YEARS OF THE UNION  
The Constitution was drafted in 1787 and ratified in 1788. It established the framework for the federal government and the relationship between the states and the federal government. The early years of the Union were marked by challenges, including the War of 1812 and the issue of slavery.

CHAPTER V  
THE CIVIL WAR AND RECONSTRUCTION  
The Civil War, fought from 1861 to 1865, was a pivotal moment in American history. It resulted in the abolition of slavery and the preservation of the Union. The Reconstruction period followed, as the nation sought to rebuild and integrate the freed slaves into society.

CHAPTER VI  
THE GROWTH OF THE UNITED STATES  
The United States continued to grow and expand its territory throughout the 19th century. The acquisition of new lands, such as the Louisiana Purchase and the Texas Annexation, significantly increased the size of the country. This period also saw the rise of industrialization and the growth of the middle class.

CHAPTER VII  
THE WESTERN EXPANSION  
The Western Expansion was a major theme of the 19th century. Settlers moved westward in search of new opportunities, leading to the development of the frontier. This period was also marked by conflicts with Native Americans and the discovery of gold in California.

CHAPTER VIII  
THE REFORM MOVEMENTS  
The Reform Movements of the 19th century included the Abolitionist Movement, the Women's Rights Movement, and the Temperance Movement. These movements sought to address social issues and promote reform in American society.

CHAPTER IX  
THE GILDED AGE  
The Gilded Age, spanning the late 19th century, was a period of rapid industrialization and economic growth. It was characterized by the rise of powerful industrialists and the accumulation of vast wealth. Despite the economic success, there were also social problems, including poverty and corruption.

CHAPTER X  
THE PROGRESSIVE MOVEMENT  
The Progressive Movement emerged in the early 20th century as a response to the problems of the Gilded Age. Progressives sought to reform society and government, addressing issues such as labor rights, social welfare, and government regulation.

CHAPTER XI  
THE WORLD WAR PERIOD  
The World War Period, from 1914 to 1918, was a time of global conflict. The United States entered the war in 1917, and its involvement played a significant role in the outcome. The war led to significant changes in American society, including the role of women and the impact of technology.

CHAPTER XII  
THE INTERWAR PERIOD  
The Interwar Period, from 1918 to 1929, was a time of relative peace and economic growth. The United States emerged as a world power, and its influence was felt globally. However, the period also saw the rise of the Ku Klux Klan and other extremist groups.

CHAPTER XIII  
THE GREAT DEPRESSION  
The Great Depression, which began in 1929, was a period of severe economic hardship. It led to widespread unemployment and poverty across the United States. The New Deal, implemented by President Franklin D. Roosevelt, aimed to provide relief and reform.

CHAPTER XIV  
THE SECOND WORLD WAR  
The Second World War, from 1939 to 1945, was a global conflict that resulted in the defeat of the Axis powers. The United States played a crucial role in the war, and its victory established it as a superpower.

CHAPTER XV  
THE COLD WAR  
The Cold War, from 1945 to 1991, was a period of tension between the United States and the Soviet Union. It was characterized by a nuclear arms race and proxy wars around the world. The war ended with the collapse of the Soviet Union in 1991.

CHAPTER XVI  
THE POST-COLD WAR PERIOD  
The Post-Cold War Period, from 1991 to the present, has been marked by significant changes in the world. The United States has remained a major power, and the world has seen the rise of new global powers. The period has also been characterized by technological advancements and global challenges.



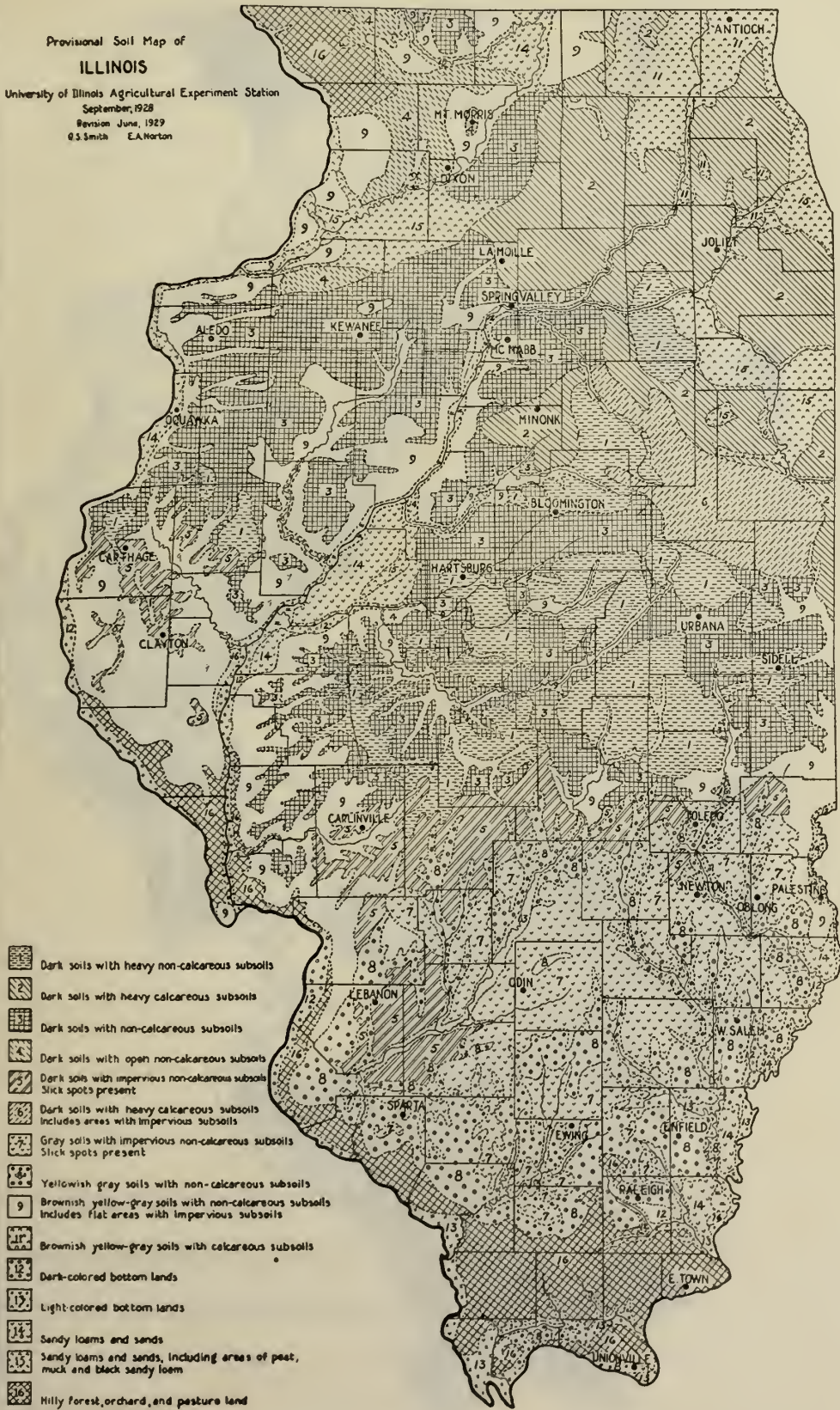
Provisional Soil Map of

ILLINOIS

University of Illinois Agricultural Experiment Station

September, 1928

Revision June, 1929  
G.S. Smith E.A. Horton

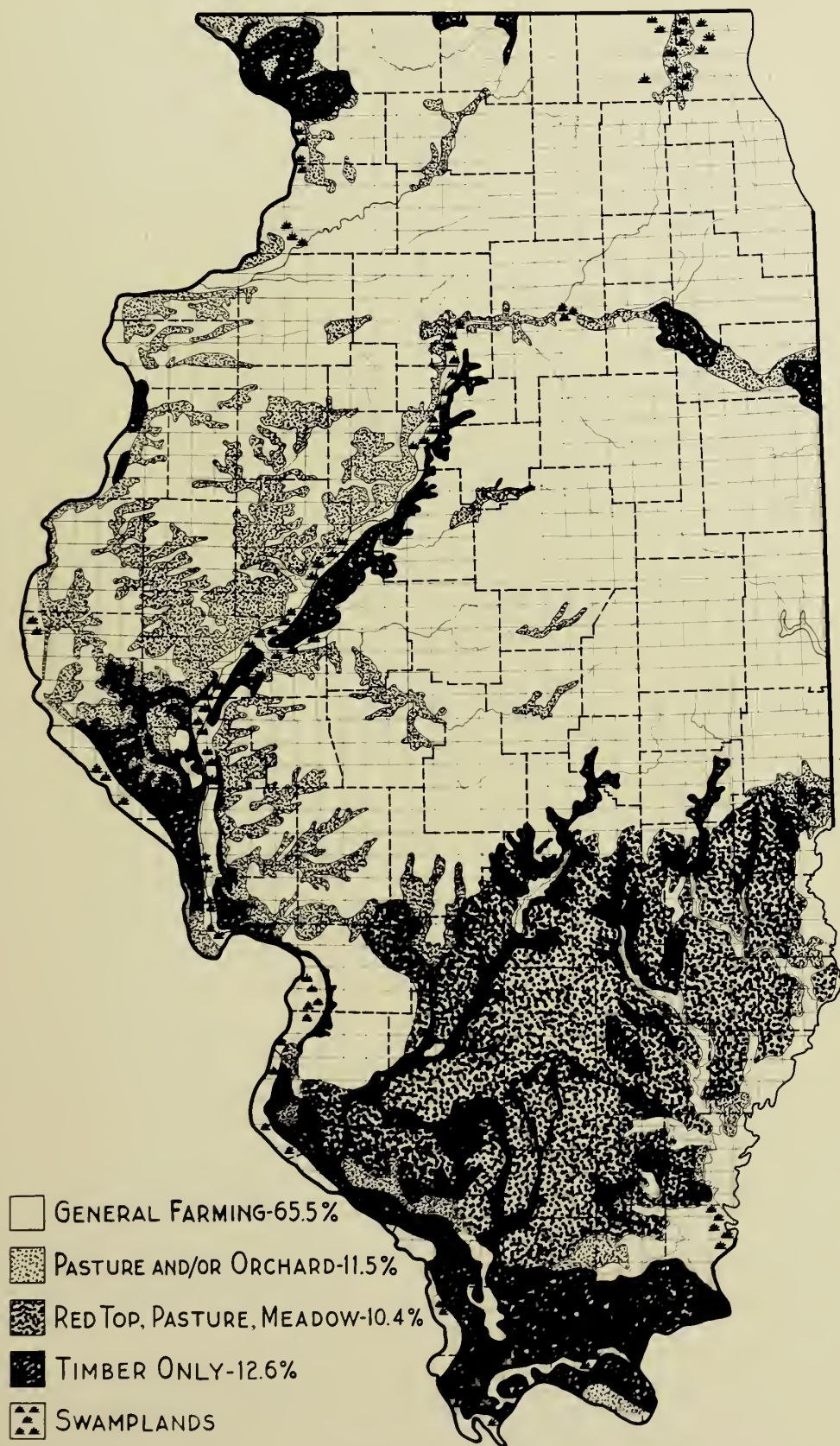


- Dark soils with heavy non-calcareous subsoils
- Dark soils with heavy calcareous subsoils
- Dark soils with non-calcareous subsoils
- Dark soils with open non-calcareous subsoils
- Dark soils with impervious non-calcareous subsoils  
Slick spots present
- Dark soils with heavy calcareous subsoils  
Includes areas with impervious subsoils
- Gray soils with impervious non-calcareous subsoils  
Slick spots present
- Yellowish gray soils with non-calcareous subsoils
- Brownish yellow-gray soils with non-calcareous subsoils  
Includes flat areas with impervious subsoils
- Brownish yellow-gray soils with calcareous subsoils
- Dark-colored bottom lands
- Light-colored bottom lands
- Sandy loams and sands
- Sandy loams and sands, including areas of peat,  
muck and black sandy loam
- Hilly forest, orchard, and pasture land
- Swampy



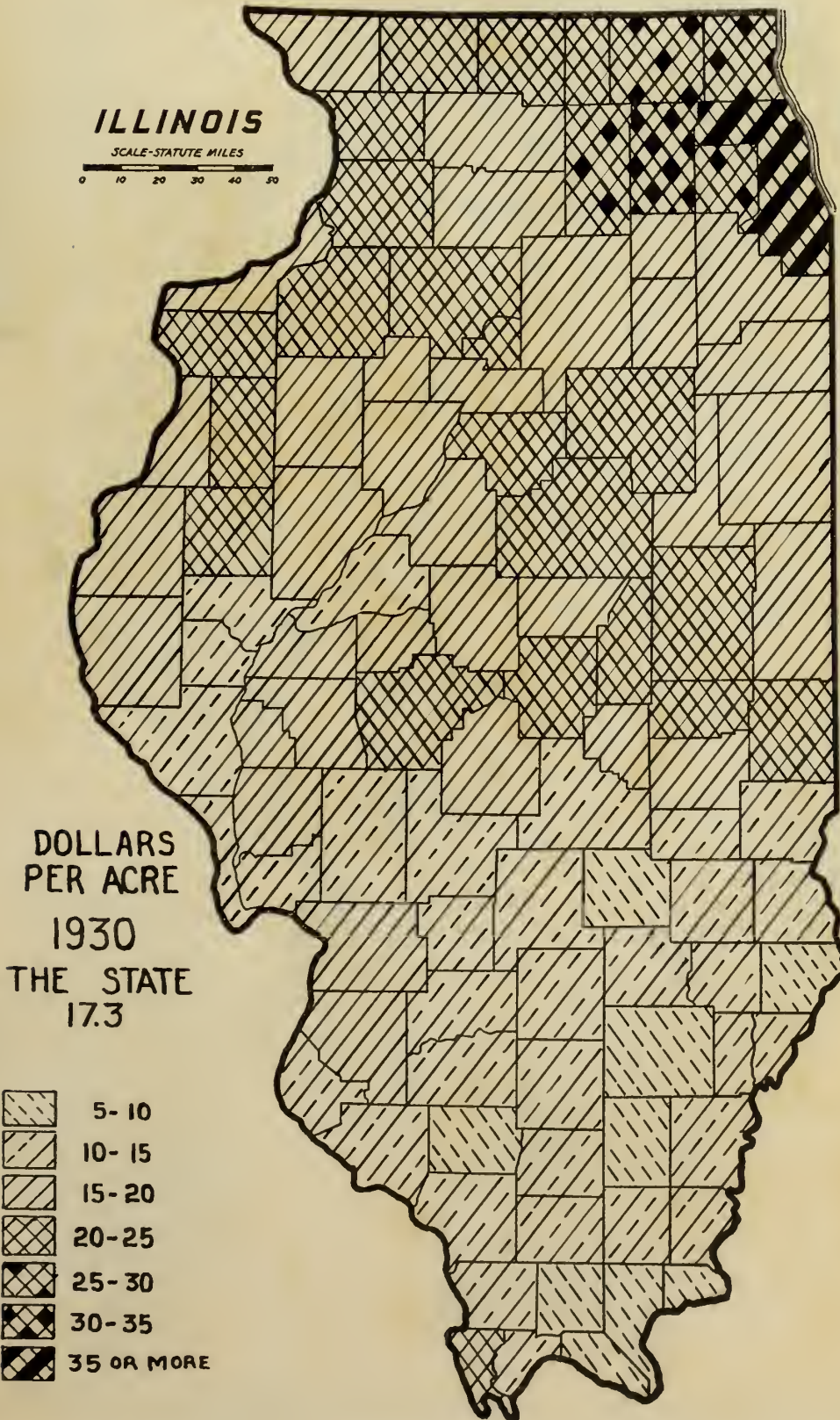


# GENERALIZED LAND-USE MAP ... OF ILLINOIS ...





## GROSS INCOME







# POPULATION ON FARMS ILLINOIS 1930

## PERCENT OF TOTAL POPULATION

100

90-100

80-90

70-80

60-70

50-60

40-50

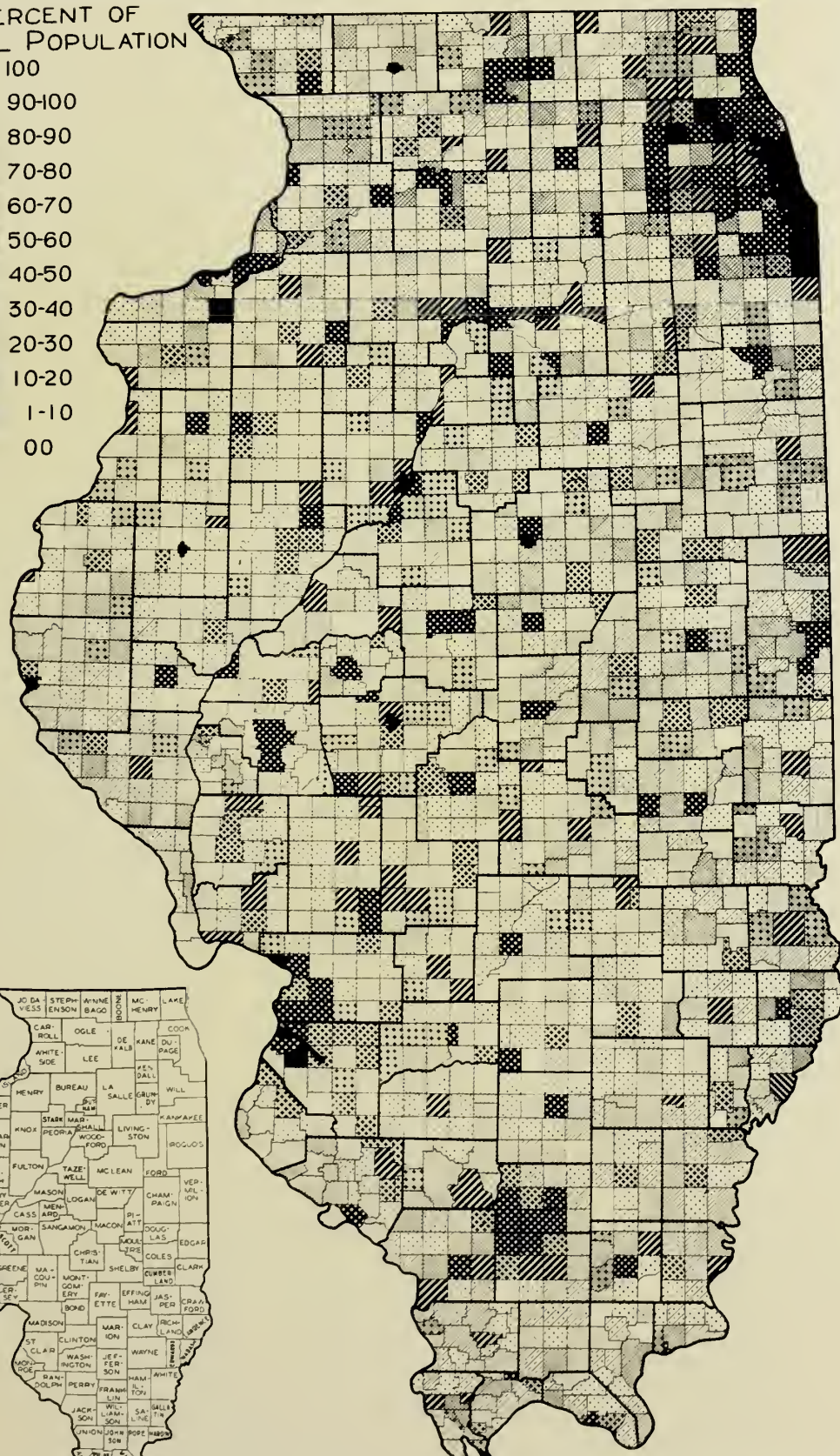
30-40

20-30

10-20

1-10

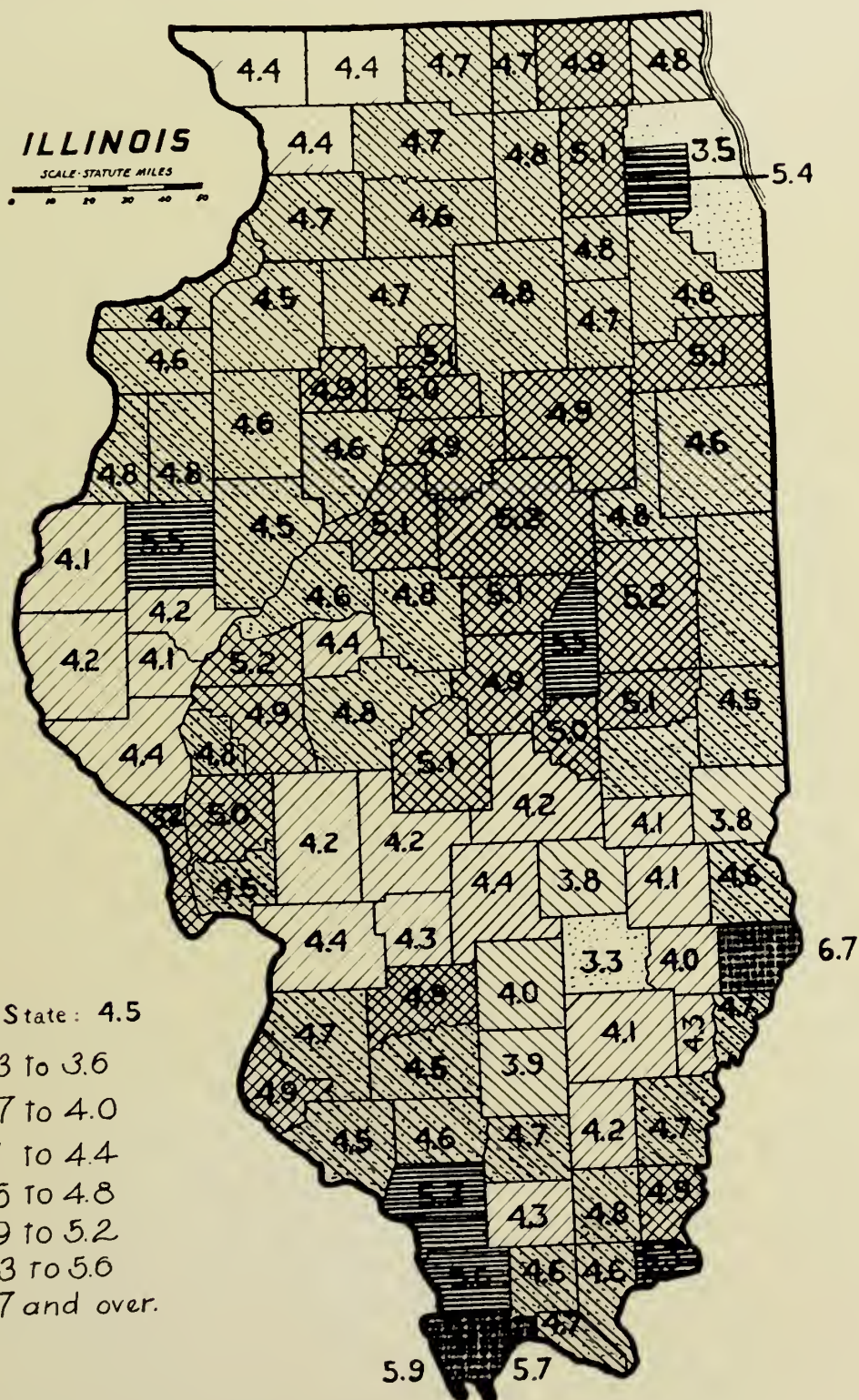
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# NUMBER OF PEOPLE PER FARM IN ILLINOIS BY COUNTIES, 1930<sup>1</sup>



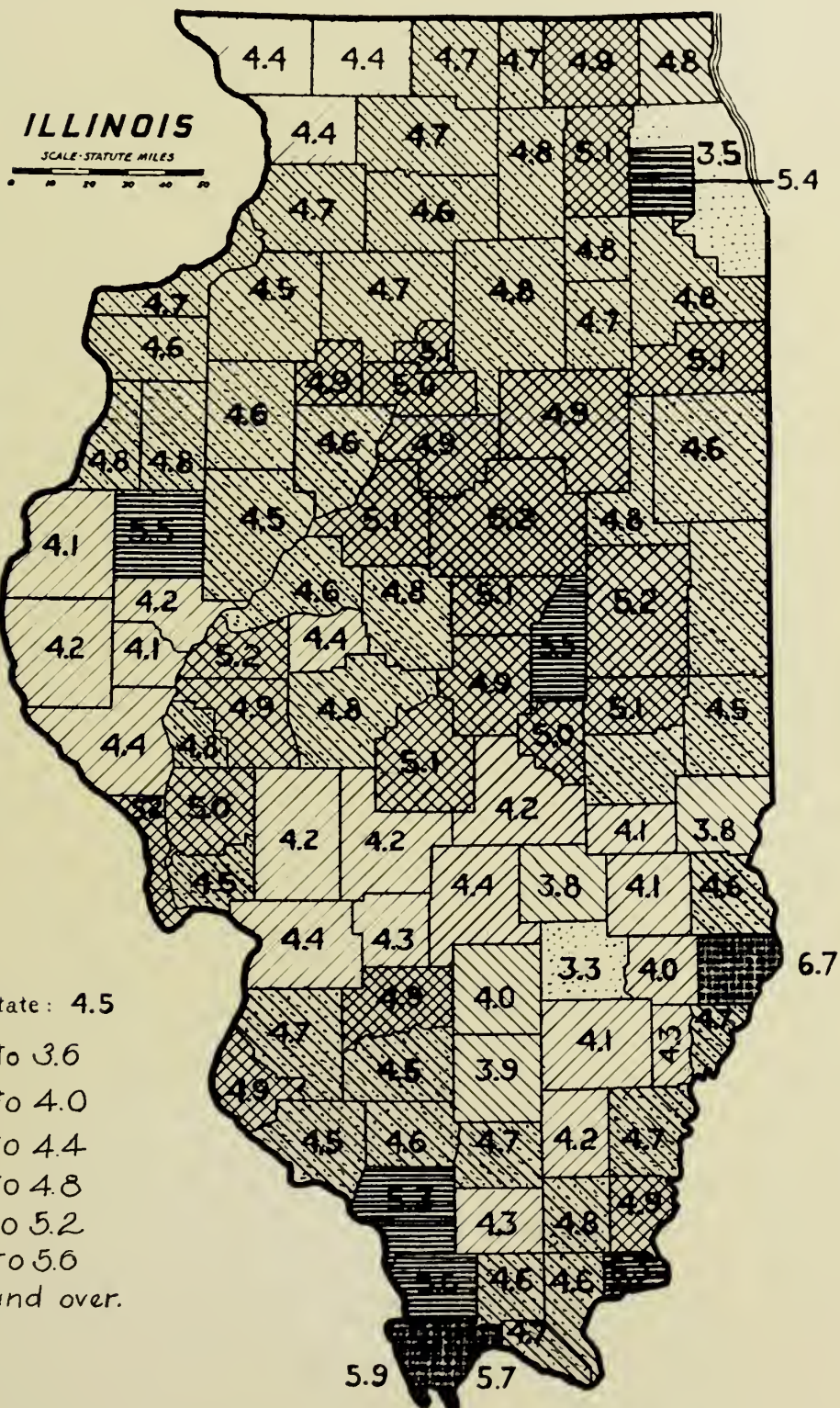
<sup>1</sup>From Fifteenth United States Census

UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION  
RESEARCH IN RURAL SOCIOLOGY





# NUMBER OF PEOPLE PER FARM IN ILLINOIS BY COUNTIES, 1930<sup>1</sup>

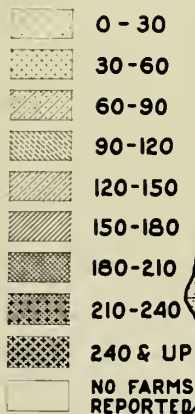


<sup>1</sup>From Fifteenth United States Census





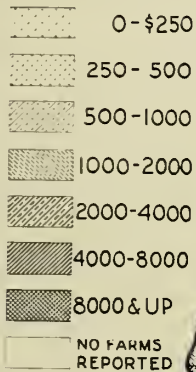
## DOLLARS PER ACRE







## DOLLARS PER FARM

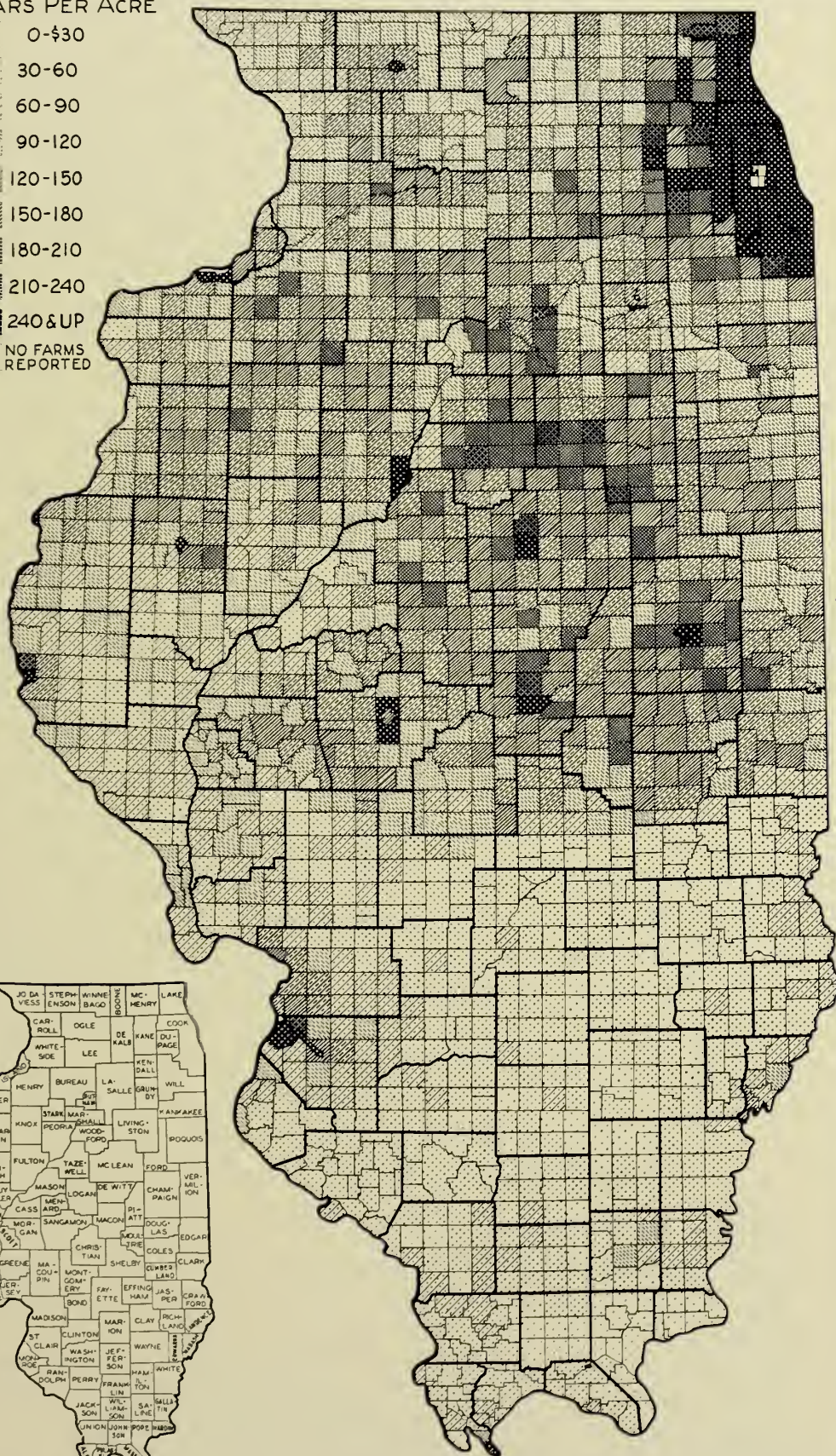
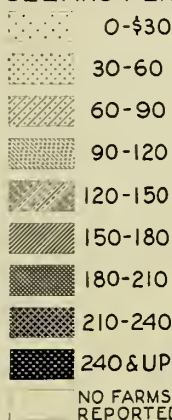


UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION





# DOLLARS PER ACRE







UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION  
Department of Agricultural Economics

**ILLINOIS**

SCALE-STATUTE MILES

0 10 20 30 40 50

Percent of Farm Lands  
Tax Delinquent in  
Selected Illinois  
Counties; Average  
of Years 1931-'33.

Percent:

0-4.99



5-9.99



10-14.99



15-19.99



20-24.99



25-29.99



30-34.99



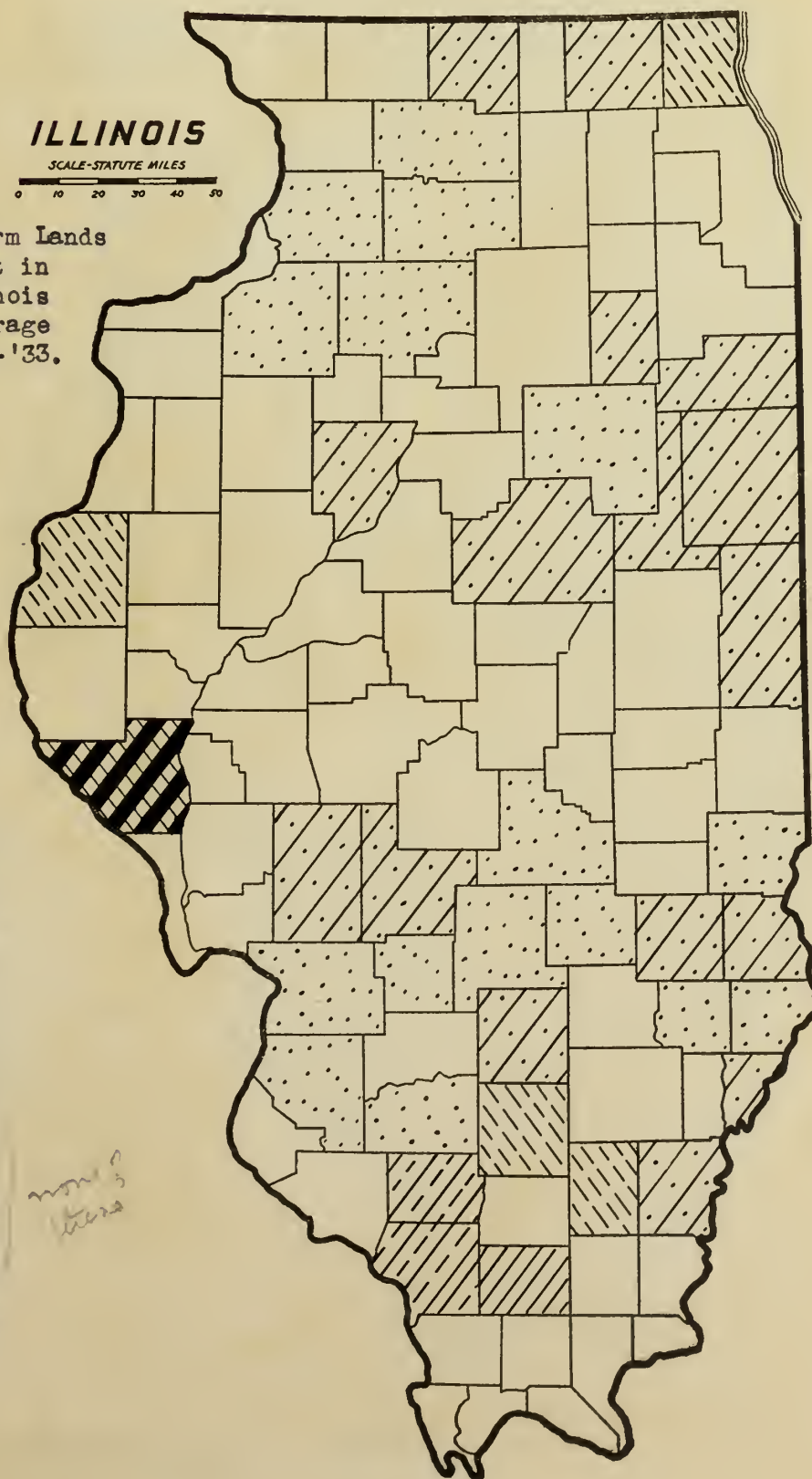
35-39.99



40-44.99



*none  
here*

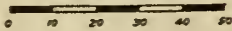




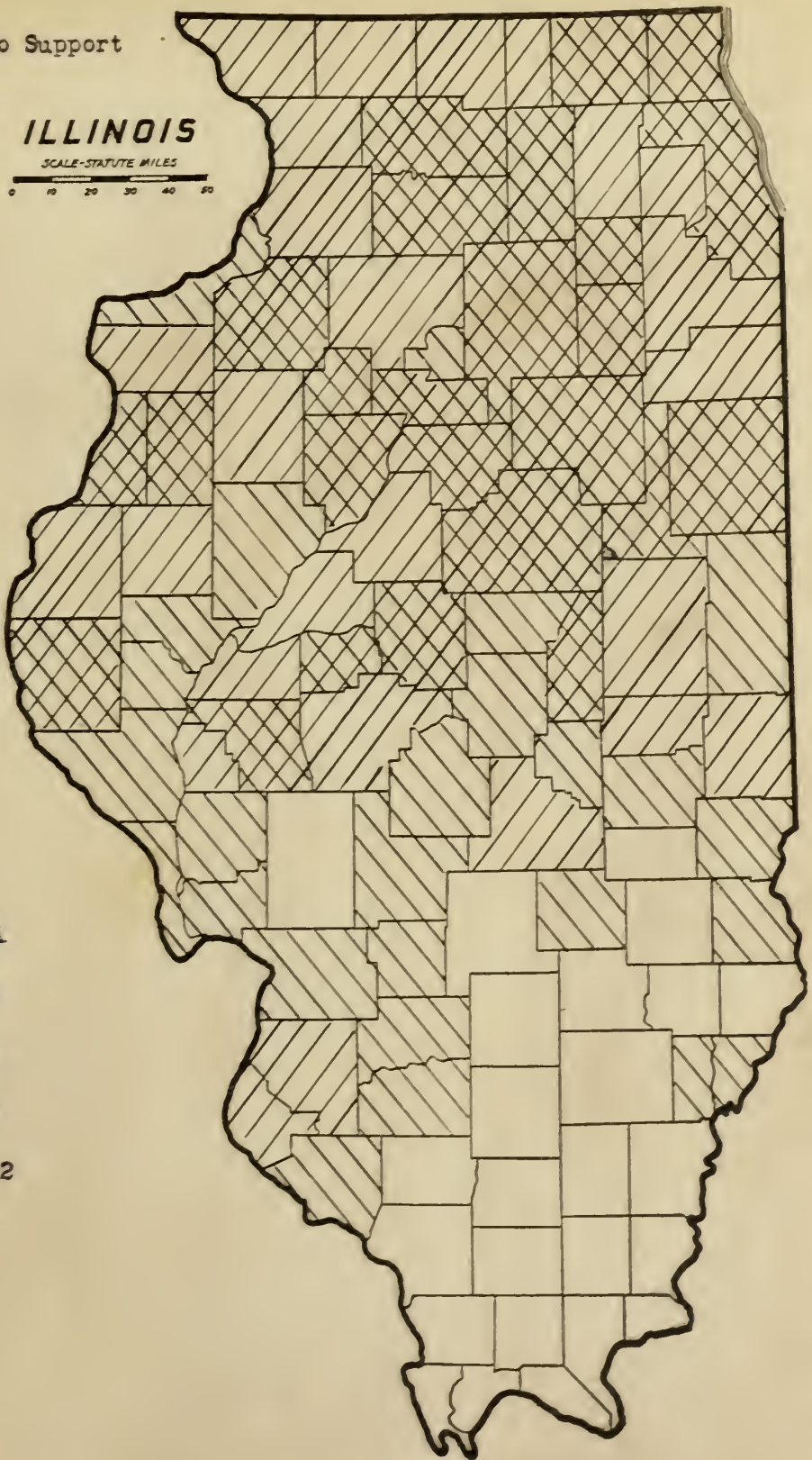
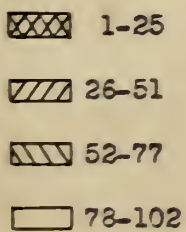
Rank in Ability to Support  
Education.

**ILLINOIS**

SCALE-STATUTE MILES



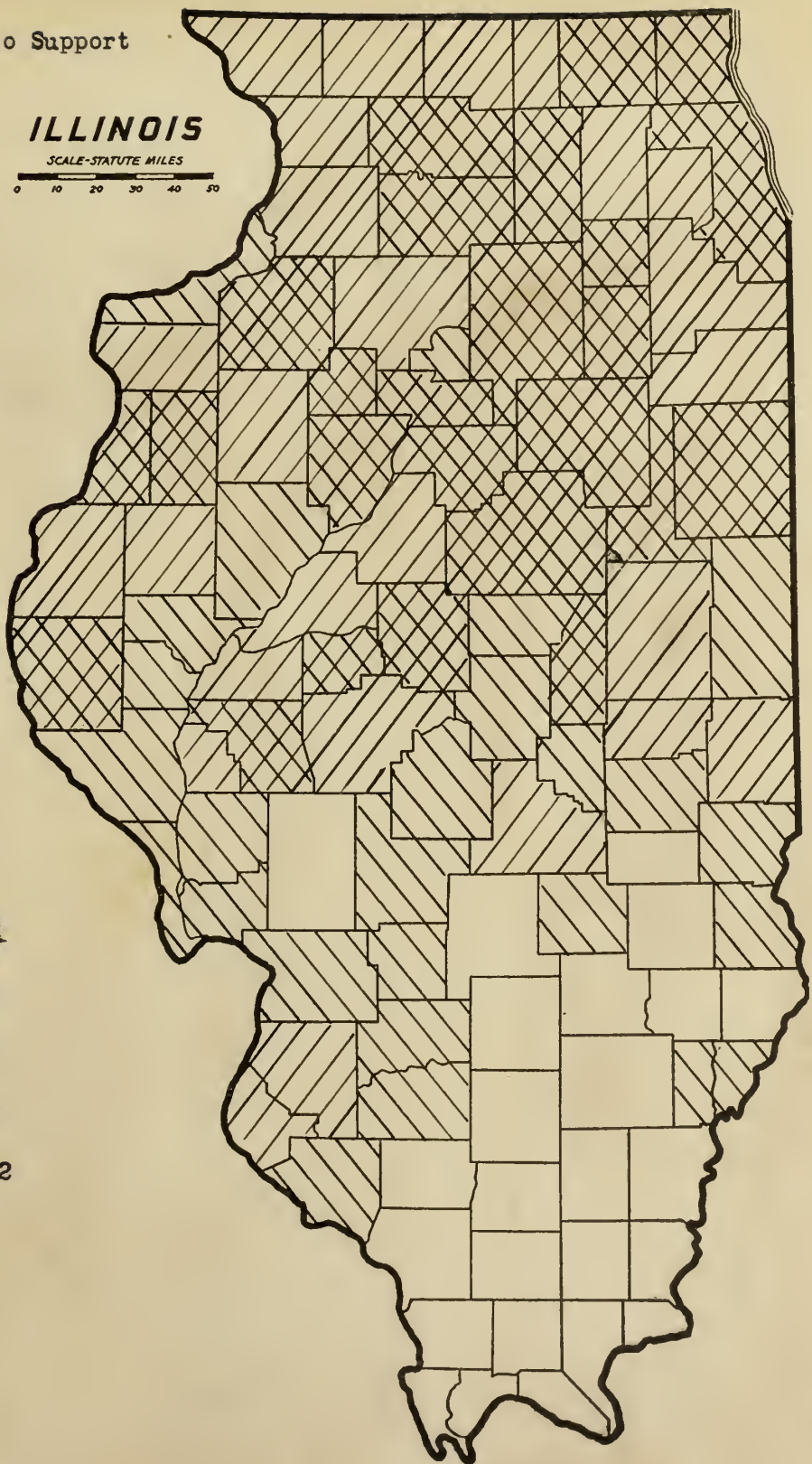
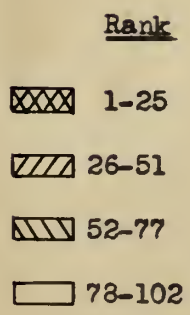
Rank







Rank in Ability to Support  
Education.

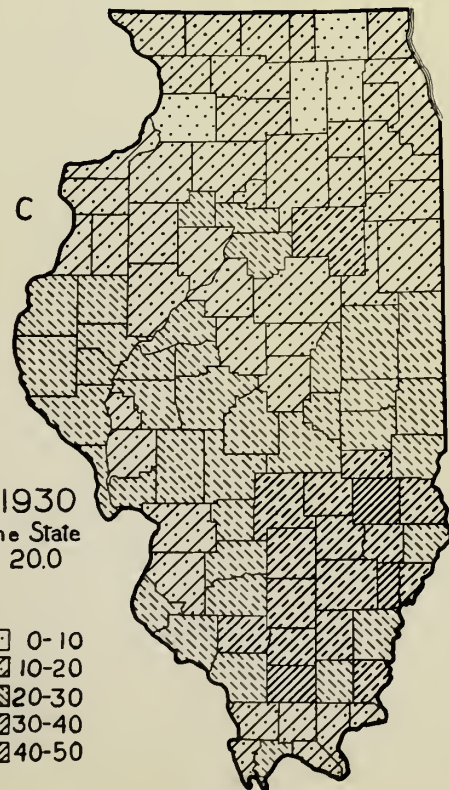
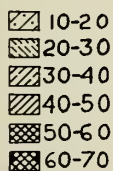




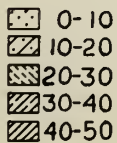
PERCENTAGE OF ALL HARVESTED CROP LAND OPERATED  
BY FULL OWNERS (A AND B) AND BY PART OWNERS (C AND D),  
ILLINOIS, CENSUS, 1925 AND 1930.

A

1930  
The State  
25.6

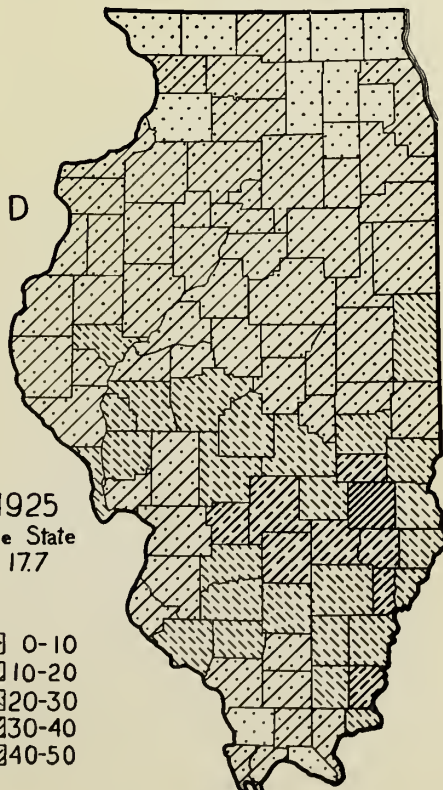


1930  
The State  
20.0

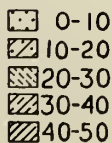


B

1925  
The State  
29.5



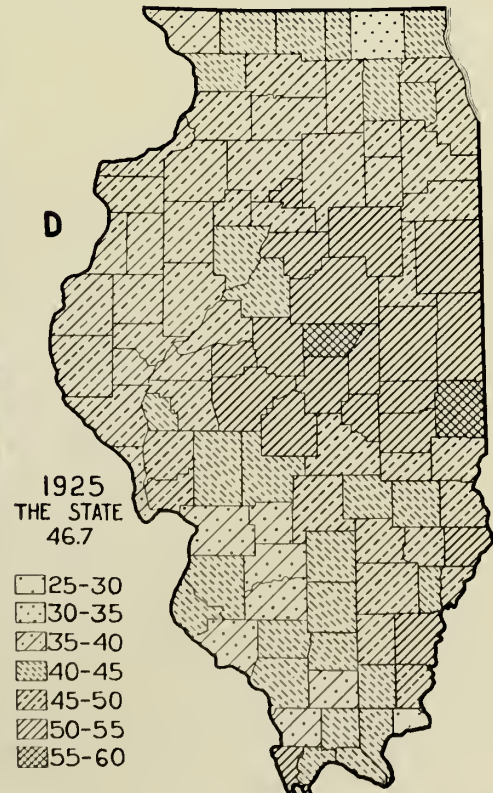
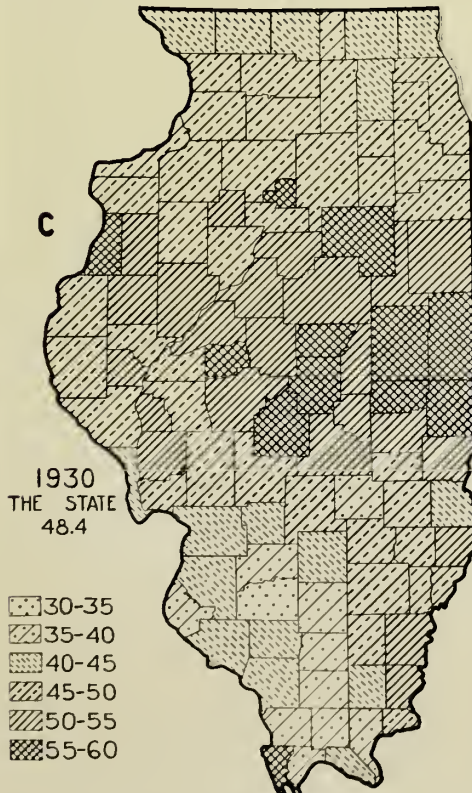
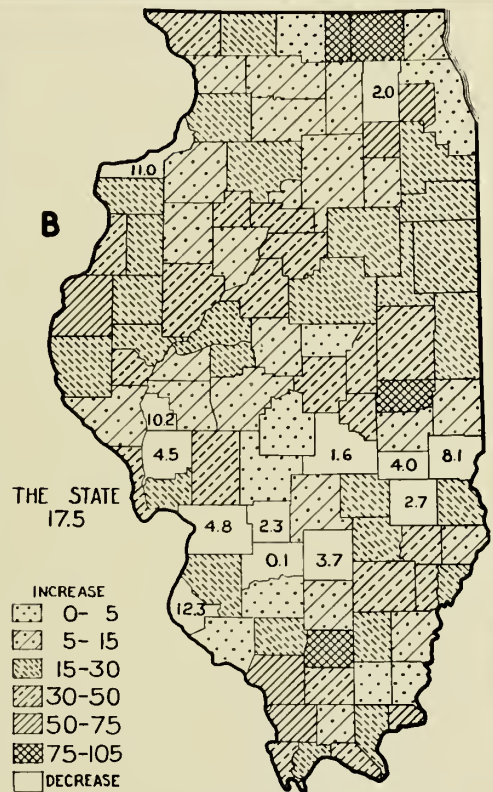
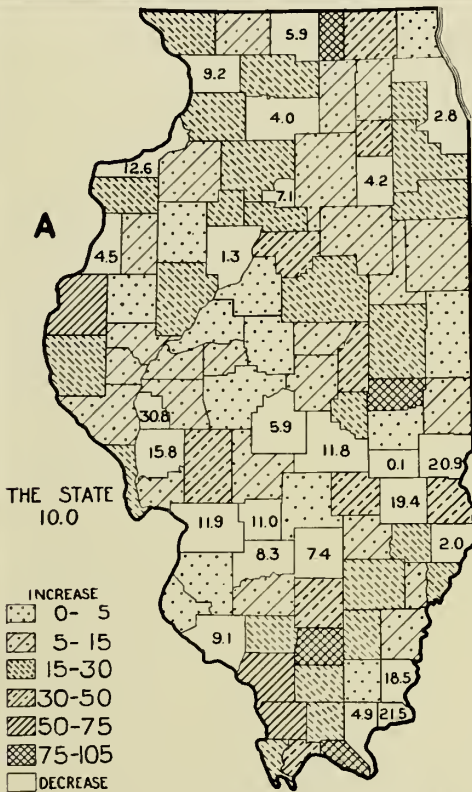
1925  
The State  
17.7







**PROPORTIONAL CHANGE IN ACREAGE OF ALL FARM LAND  
OPERATED BY PART OWNERS, 1924-1929, (A) AS OWNED LAND, AND (B) AS  
RENTED LAND; AND PERCENTAGE OF PART-OWNER ACREAGE OPERATED AS  
RENTED LAND, 1929 (C) AND 1924 (D), ILLINOIS, CENSUS, 1925 AND 1930.**





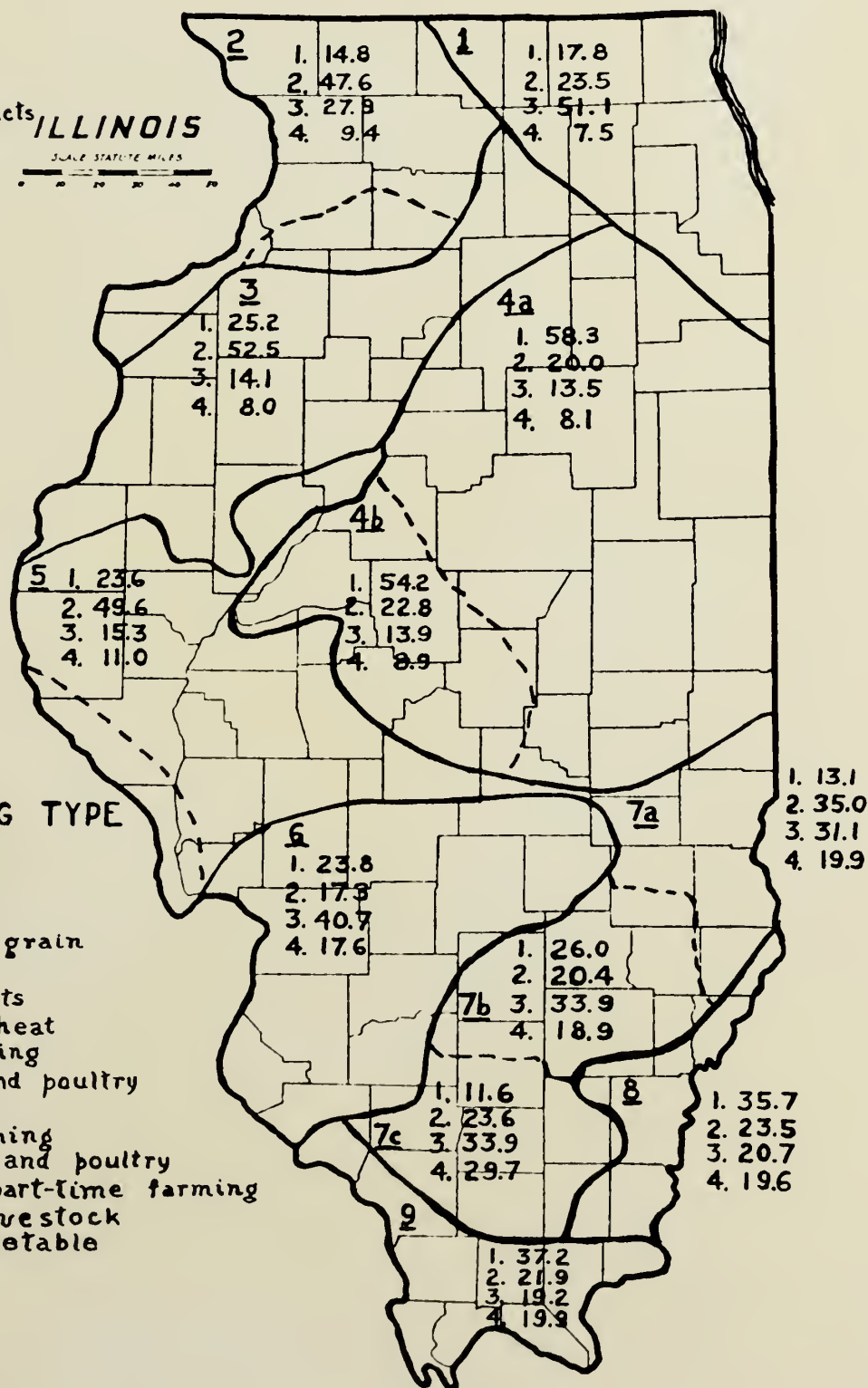


# AMOUNT AND DISTRIBUTION OF FARM INCOMES<sup>1</sup> BY SOURCES IN ILLINOIS IN 1929

## PERCENTAGE

1. Crops
2. Livestock
3. Livestock products
4. Family use

ILLINOIS  
SCALE STATUTE MILES  
0 10 20 30 40 50



## MAJOR FARMING TYPE AREAS

1. Dairy and truck
2. Mixed livestock
3. Livestock and grain
4. Cash grain
  - a. Corn and oats
  - b. Corn and wheat
5. General farming
6. Wheat, dairy and poultry
7. Mixed farming
  - a. General farming
  - b. Redtop, fruit and poultry
  - c. General and part-time farming
8. Grain and livestock
9. Fruit and vegetable

<sup>1</sup>Value of farm products sold, traded or used by operator's family.  
UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION

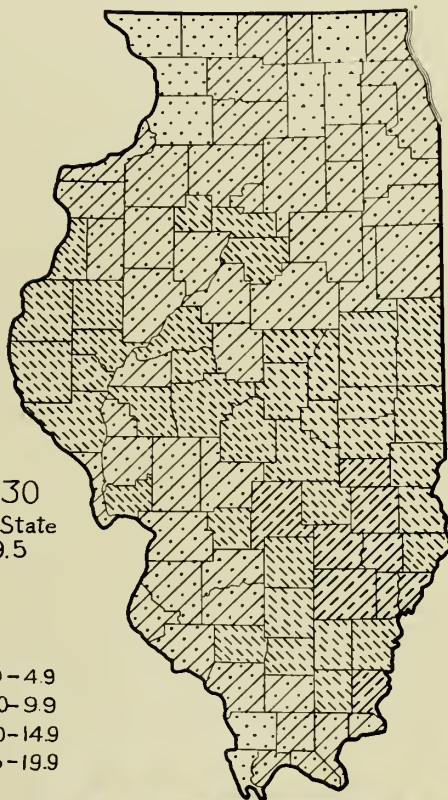
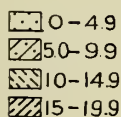




PERCENTAGE OF ALL LAND IN FARMS OPERATED AS  
RENTED LAND BY PART OWNERS (A AND B) AND BY TENANTS  
AND PART OWNERS (C AND D), ILLINOIS, CENSUS, 1925 AND 1930.

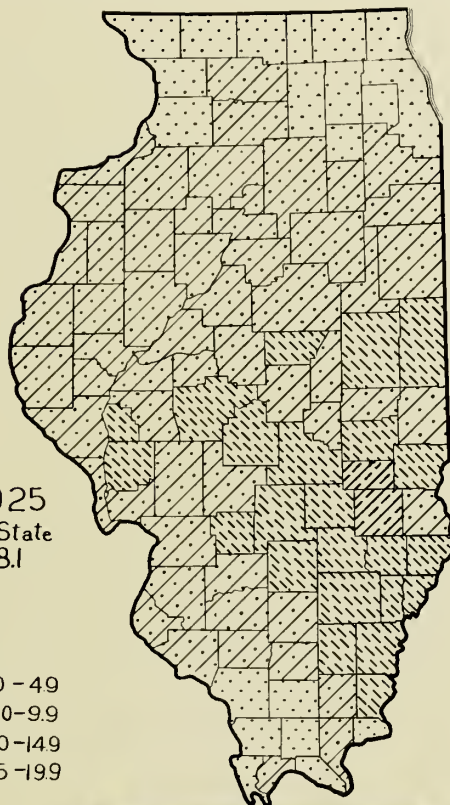
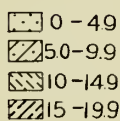
A

1930  
The State  
9.5



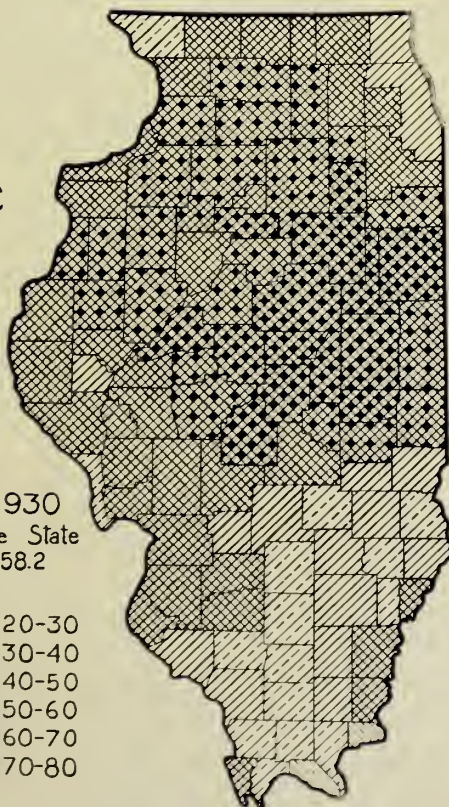
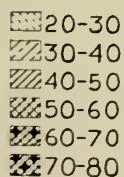
B

1925  
The State  
8.1



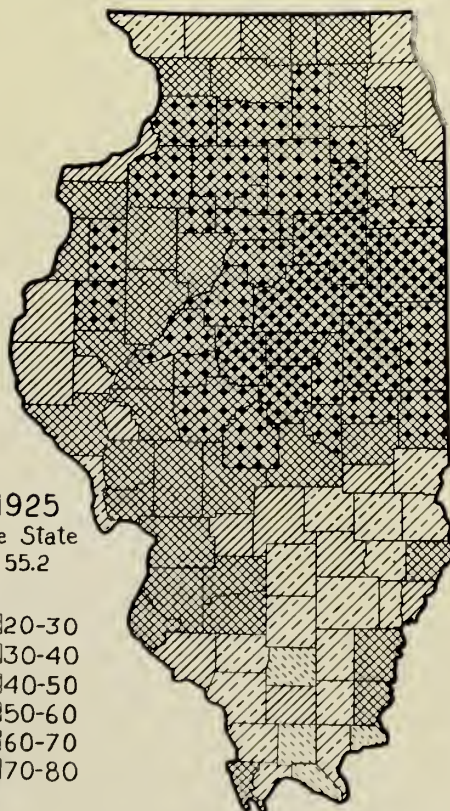
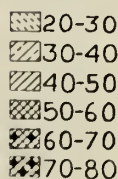
C

1930  
The State  
58.2



D

1925  
The State  
55.2

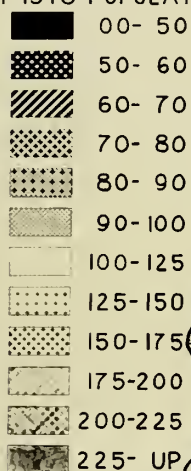






## COMPARISON OF 1930 WITH 1910 POPULATION IN ILLINOIS

PERCENT 1930 WAS  
OF 1910 POPULATION



**A TWO OR MORE  
UNITS COMPUTED  
TOGETHER\***



<sup>†</sup> DUE TO REORGANIZATION SINCE 1910



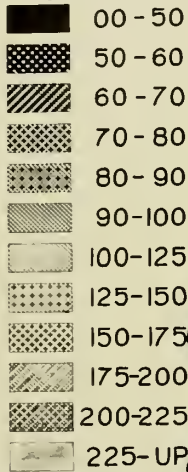




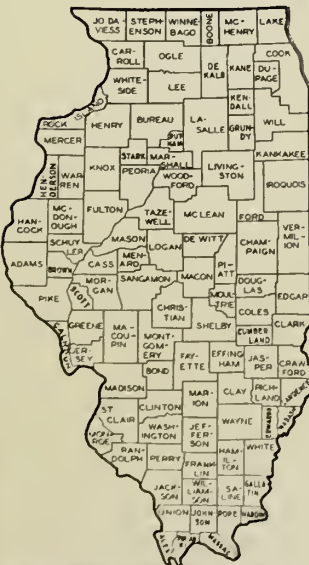


### COMPARISON OF 1930 WITH 1920 POPULATION IN ILLINOIS

PERCENT 1930 WAS  
OF 1920 POPULATION



A TWO OR MORE  
UNITS COMPUTED  
TOGETHER\*



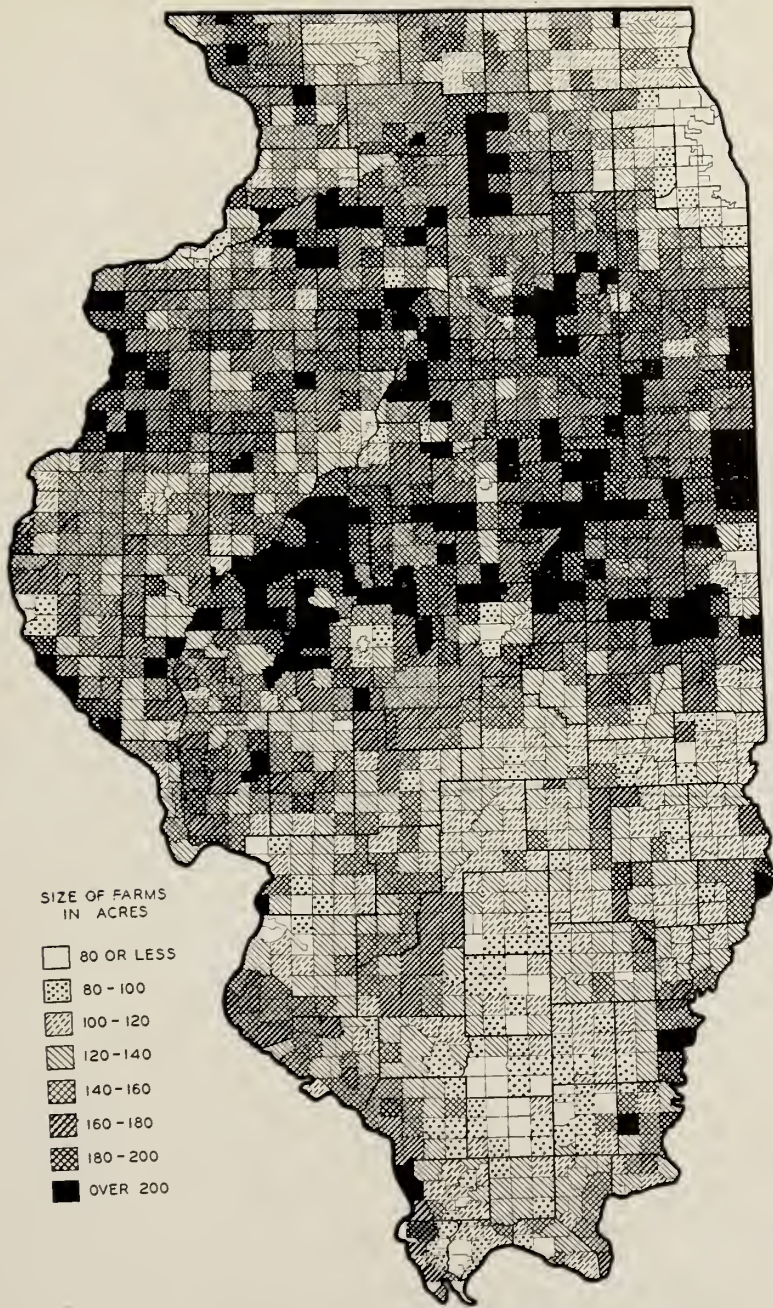
<sup>†</sup> DUE TO REORGANIZATION SINCE 1920











■.—SIZE OF FARMS IN ILLINOIS, 1930

Farms are largest in the central part of the state, where land values are highest and natural conditions are adapted to extensive methods of farming.

# PLATE XVII

University of Illinois  
Agricultural Experiment Station  
Department of Agricultural Economics

LIBRARY  
OF THE  
UNIVERSITY OF ILLINOIS



# SOIL EROSION IN ILLINOIS

UNIVERSITY OF ILLINOIS  
SOIL SURVEY





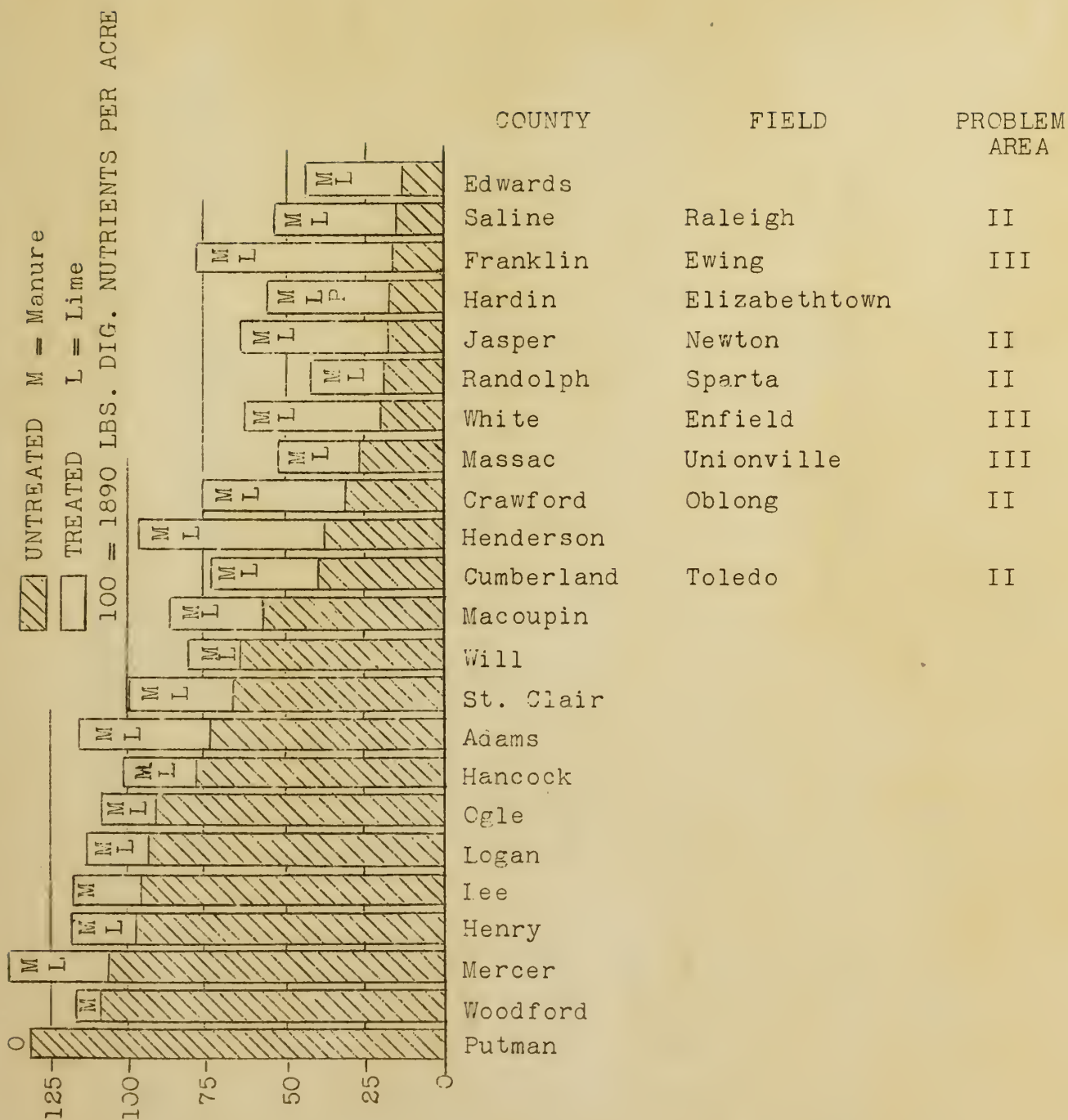


CHART I. RELATIVE PRESENT and POTENTIAL PRODUCTIVITY LEVELS  
 For Illinois Soil Experiment Fields in Livestock Systems  
 of Farming 1929 - 32.

(Chart from Illinois Soil Experiment Fields)





# SUMMARY OF DATA\* ON SUGGESTED PROBLEM AREAS (ILLINOIS)

| PROBLEM<br>AREA | TOTAL<br>ACRES | AV. SIZE<br>OF FARM<br>(ACRES) | POPULATION | AVERAGE               |                           | PER ACRE | LAND UTILIZATION |           |             | TAX<br>DELINQ.     |
|-----------------|----------------|--------------------------------|------------|-----------------------|---------------------------|----------|------------------|-----------|-------------|--------------------|
|                 |                |                                |            | GROSS<br>INCOME       | PER FARM                  |          | (ESTIMATE ACRES) |           |             |                    |
|                 |                |                                |            |                       |                           |          | CROP LAND        | PASTURE   | WOODS       |                    |
| I               | 3,292,300      | 161.2                          | 92,543     |                       |                           |          | 1,105,471        | 686,998   | 1,499,831** | 1,499,831**        |
| II              | 4,249,800      | 116.0                          | 81,920     | Less than<br>\$10.00  | Less than<br>\$1500.00    |          | 2,534,876        | 1,147,446 | 254,988     | 212,490 1.2%-18.7% |
| III             | 1,645,000      | 110.0                          | 83,520     | Less than<br>\$10.00  | Less than<br>\$1500.00    |          | 1,036,350        | 444,150   | 82,250      | 82,250 1.2%-18.7%  |
| IV              | 3,470,500      | 146.0                          | 163,041    | \$10.00 to<br>\$20.00 | \$1500.00 to<br>\$2500.00 |          | 1,978,185        | 1,249,380 | 69,410      | 173,525 3.7%-40%   |
| V               | 270,000        | 113.0                          | 12,138     | \$10.00 to<br>\$20.00 | \$1500.00 to<br>\$2500.00 |          | 162,000          | 62,100    | 32,400      | 13,500 4.1%-40%    |
| VI***           | 104,570        |                                | 2,440      |                       |                           |          |                  |           |             |                    |
| VII***          | 272,800        |                                | 41,288     |                       |                           |          |                  |           |             |                    |
| VIII***         | 3,812,700      |                                | 1,710      |                       |                           |          |                  |           |             |                    |
| IX              | 444,058        | 171.8                          | 12,570     |                       |                           |          | 354,575          | 61,283    | 14,476      | 13,724             |
| X               | 648,011        | 180.5                          | 17,350     |                       |                           |          | 534,541          | 75,969    | 19,625      | 17,876             |

\* Data Estimated.

\*\* Acreage in woods and other land not separated.

\*\*\* Includes acreage also classed as forest lands. Data incomplete.

TABLE I



卷之四

[illegible]

1870

1

10

3

| PROBLEM<br>AREA             | FIELD         | GENER. AGRIC.<br>RATING OF<br>SOILS* | CROP YIELDS ON UNTREATED PLOTS--ILLINOIS SOIL EXPERIMENT FIELDS |                 |                | C O R N         |                 |                | O A T S         |                 |                | W H E A T       |                 |                |
|-----------------------------|---------------|--------------------------------------|---|-----------------|----------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|
|                             |               |                                      | YEARS IN<br>THIS<br>RECORD                                      | NO. OF<br>CROPS | AVER.<br>YIELD | BU. PER<br>ACRE | NO. OF<br>CROPS | AVER.<br>YIELD | BU. PER<br>ACRE | NO. OF<br>CROPS | AVER.<br>YIELD | BU. PER<br>ACRE | NO. OF<br>CROPS | AVER.<br>YIELD |
|                             |               |                                      |   |                 |                |                 |                 |                |                 |                 |                |                 |                 |                |
| I                           | Oblong        | 9                                    | 1912-33   | 21              | 20.6           |                 | 19              | 19.0           |                 | 19              | 8.8            |                 | 9               | .3             |
|                             | Odin          | 9                                    | 1902-31   | 29              | 18.0           |                 |                 |                |                 | 28              | 8.3            |                 |                 |                |
|                             | Newton        | 8                                    | 1912-33   | 26              | 11.0           |                 | 7               | 11.0           |                 | 22              | 1.0            |                 | 7               | 1.5            |
|                             | Toledo        | 7                                    | 1913-33   | 20              | 19.7           |                 | 19              | 14.0           |                 | 16              | 10.0           |                 | 12              | .2             |
|                             | Raleigh       | 9                                    | 1910-33   | 23              | 19.3           |                 | 22              | 12.0           |                 | 16              | 5.4            |                 | 14              | .1             |
|                             | Sparta        | 9                                    | 1916-33   | 17              | 11.8           |                 | 6               | 10.7           |                 | 13              | 5.7            |                 | 16              | .37            |
| Average Yield & Total Crops |               |                                      |   | 136             | 15.9           |                 | 73              | 12.1           |                 | 114             | 8.1            |                 | 58              | .6             |
| II                          | Ewing         | 8                                    | 1910-33   | 23              | 11.0           |                 | 24              | 10.4           |                 | 17              | 3.1            |                 | 7               | .2             |
|                             | Enfield       | 9                                    | 1912-33   | 20              | 16.3           |                 | 16              | 12.3           |                 | 16              | 6.8            |                 | 9               | .1             |
|                             | Unionville    | 7                                    | 1911-33   | 21              | 14.2           |                 | 7               | 9.8            |                 | 17              | 6.3            |                 |                 |                |
| Average Yield & Total Crops |               |                                      |   | 64              | 13.8           |                 | 47              | 10.8           |                 | 50              | 5.4            |                 | 16              | .15            |
| V                           | Elizabethtown | 9                                    | 1917-33   | 15              | 12.6           |                 | 2               | 13.0           |                 | 22              | 3.8            |                 | 10              | .1             |
| Average Yield & Total Crops |               |                                      |   | 15              | 12.6           |                 | 2               | 13.0           |                 | 22              | 3.8            |                 | 10              | .1             |

\* 10 represents lowest yields and 1 the highest yields

TABLE II

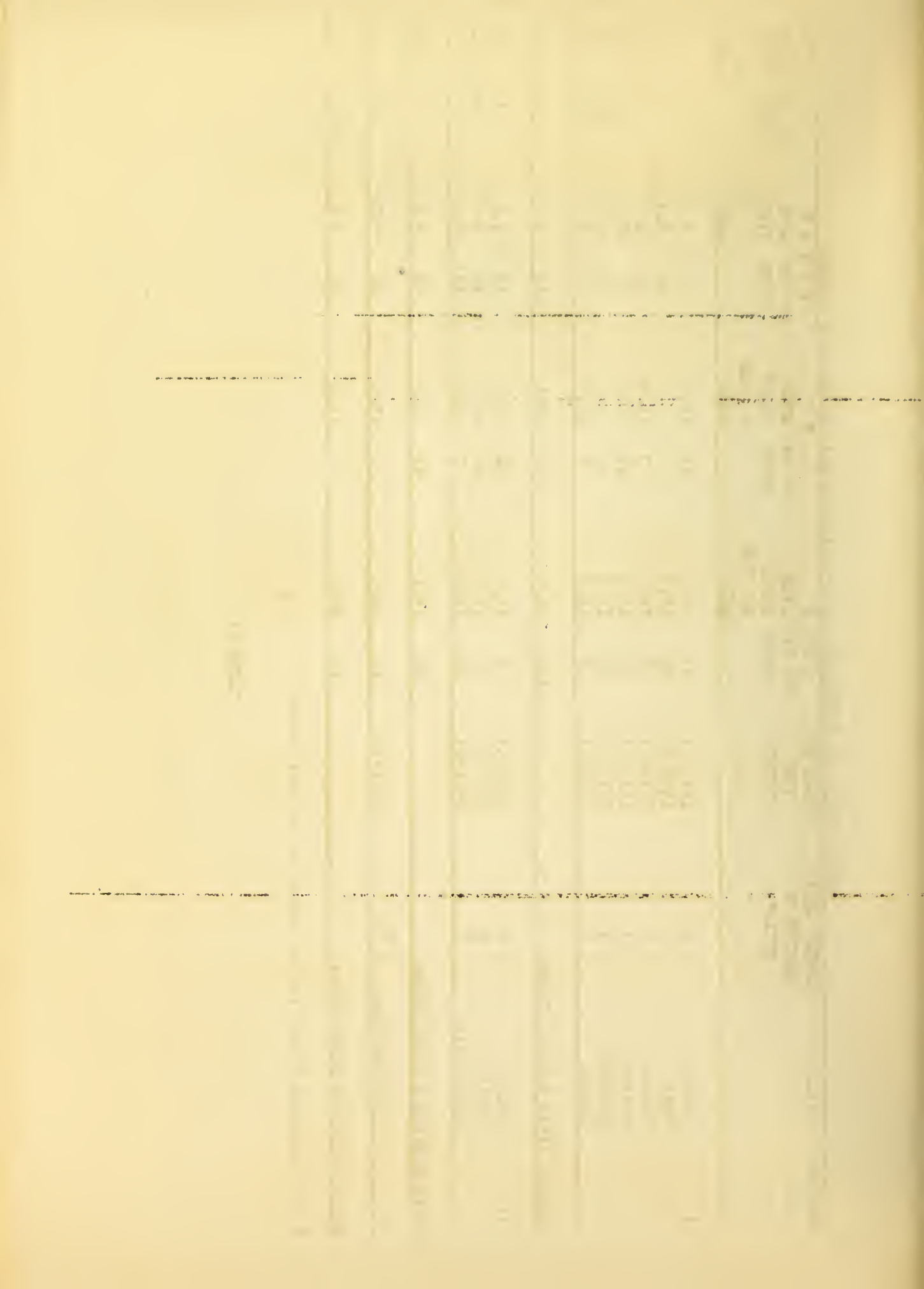


TABLE III

## SUMMARY OF DATA ON FARMS TO BE ELIMINATED BY PUBLIC ACQUISITION (AREA I)

| COUNTY     | NUMBER<br>OF<br>FARMS | ACREAGE<br>OF<br>FARMS | ASSESSED<br>VALUE OF<br>REAL ESTATE | ACREAGE<br>IN |         |
|------------|-----------------------|------------------------|-------------------------------------|---------------|---------|
|            |                       |                        |                                     | CROPS         | PASTURE |
| Adams      | 293                   | 49,000                 | 2,304,470                           | 18,620        | 25,480  |
| Alexander  | 599                   | 71,800                 | 3,781,440                           | 41,644        | 15,078  |
| Brown      | 321                   | 48,000                 | 2,964,080                           | 19,200        | 24,960  |
| Calhoun    | 594                   | 82,000                 | 6,065,540                           | 40,180        | 20,500  |
| Carroll    | 232                   | 40,100                 | 2,679,782                           | 18,045        | 18,045  |
| Cass       | 102                   | 21,000                 | 1,509,900                           | 16,380        | 1,470   |
| Clark      | 48                    | 5,000                  | 254,800                             | 2,700         | 1,750   |
| Effingham  | 98                    | 12,000                 | 578,760                             | 6,120         | 5,040   |
| Gallatin   | 131                   | 16,074                 | 565,653                             | 9,882         | 6,405   |
| Grundy     | 118                   | 16,000                 | 1,536,000                           | 12,000        | 3,360   |
| Hamilton   | 334                   | 34,200                 | 840,636                             | 18,126        | 11,628  |
| Hardin     | 765                   | 102,400                | 2,156,544                           | 33,792        | 49,152  |
| Henderson  | 41                    | 12,000                 | 672,600                             | 7,320         | 3,840   |
| Iroquois   | 99                    | 24,000                 | 1,940,200                           | 16,320        | 7,920   |
| Jackson    | 790                   | 108,300                | 4,319,704                           | 62,814        | 27,075  |
| Jefferson  | 245                   | 22,000                 | 761,200                             | 11,440        | 8,140   |
| Jersey     | 429                   | 73,800                 | 3,375,018                           | 41,328        | 23,616  |
| Jo Daviess | 1,680                 | 228,450                | 19,797,477                          | 102,802       | 109,656 |
| Johnson    | 1,320                 | 154,240                | 4,440,569                           | 66,323        | 55,526  |
| Kankakee   | 108                   | 32,000                 | 1,639,680                           | 14,720        | 9,280   |
| Marshall   | 48                    | 8,500                  | 634,183                             | 3,910         | 3,485   |
| Mason      | 410                   | 95,900                 | 5,712,763                           | 74,802        | 10,459  |
| Massac     | 530                   | 56,800                 | 2,127,160                           | 28,968        | 17,040  |

(Continued)





TABLE IV

RESULTS FROM SOIL EXPERIMENT FIELDS LOCATED ON SOIL TYPES  
 PREDOMINANT IN PROBLEM AREA II  
 (Figures indicate average annual acre yields)

| Treatment   | Yields since full treatment was applied |          |          |   |                 |          |
|---|---|----------|----------|---|-----------------|----------|
| Ewing field, Franklin county, Cisne and Hoylton silt loam |   |          |          |   |                 |          |
|   | Corn                                    | Oats     | Wheat    | Clover  | Sw. cl.<br>seed | Soybeans |
|   | 23 crops                                | 24 crops | 17 crops | 10 crops  | 4 crops         | 8 crops  |
|   | Bu.                                     | Bu.      | Bu.      | Tons  | Bu.             | Bu.      |
| O.....  | 10.6                                    | 9.4      | 3.3      | (.17)   | 0               | 3.8      |
| M.....  | 22.8                                    | 14.6     | 6.5      | (.22)   | 0               | 4.8      |
| ML.....   | 41.1                                    | 30.6     | 23.9     | (1.50)  | 1.56            | 12.0     |
| MLrP...   | 42.2                                    | 32.8     | 27.0     | (1.77)  | 1.60            | 13.1     |
| O.....  | 11.3                                    | 11.4     | 2.9      | (.15)   | 0               | 3.3      |
| R.....  | 12.7                                    | 12.1     | 3.4      | (.14)   | 0               | 3.4      |
| RL.....   | 25.1                                    | 28.1     | 20.1     | (.86)   | 1.76            | 9.6      |
| RLrP...   | 26.9                                    | 29.5     | 23.2     | (1.01)  | 1.47            | 10.2     |
| RLrPK..   | 44.0                                    | 35.4     | 30.6     | (1.41)  | 1.52            | 11.6     |
| Oblong field, Crawford county, Cisne silt loam            |   |          |          |   |                 |          |
|   | Corn                                    | Oats     | Wheat    | Clover  | Sw. cl.<br>seed | Soybeans |
|   | 21 crops                                | 19 crops | 19 crops | 12 crops  | 3 crops         | 5 crops  |
|   | Bu.                                     | Bu.      | Bu.      | Tons  | Bu.             | Tons     |
| O.....  | 19.6                                    | 16.4     | 8.1      | (.34)   | .03             | (1.13)   |
| M.....  | 30.5                                    | 24.2     | 13.2     | (.49)   | .19             | (1.29)   |
| ML.....   | 42.9                                    | 33.7     | 22.3     | (1.43)  | 1.12            | (1.96)   |
| MLrP...   | 43.4                                    | 34.8     | 27.0     | (1.77)  | 1.07            | (2.11)   |
| O.....  | 21.6                                    | 21.5     | 9.4      | (.38)   | .06             | (1.01)   |
| R.....  | 25.0                                    | 23.9     | 12.1     | (.51)   | .10             | (1.12)   |
| RL.....   | 31.5                                    | 33.0     | 20.4     | (1.45)  | 1.05            | (1.72)   |
| RLrP...   | 34.4                                    | 35.6     | 26.0     | (1.71)  | 1.07            | (1.71)   |
| RLrPK..   | 44.8                                    | 35.8     | 28.1     | (2.04)  | 1.35            | (1.98)   |
| O.....  | 21.2                                    | 19.5     | 8.9      | (.29)   | .05             | (1.46)   |
| O.....No treatment.                                       |   |          |          | R.....Residues.   |                 |          |
| M.....Manure.   |   |          |          | RL.....Residues and lime.                               |                 |          |
| ML.....Manure and lime.                                   |   |          |          | RLrP.....Residues, lime and                             |                 |          |
| MLrP.....Manure, lime and rock<br>phosphate.              |   |          |          | rock phosphate.   |                 |          |
|   |   |          |          | RLrPK.....Residues, lime, rock<br>phosphate and potash. |                 |          |

(Continued)



TABLE IV

RESULTS FROM SOIL EXPERIMENT FIELDS LOCATED ON SOIL TYPES  
 PREDOMINANT IN PROBLEM AREA II  
 (Figures indicate average annual acre yields)

| Treatment                                    | Yields since full treatment was applied |          |          |            |         |
|--|---|----------|----------|------------|---------|
| Newton field, Jasper county, Cisne silt loam |   |          |          |            |         |
|  | Corn                                    | Wheat    | Soybeans | Mixed Hay* | Oats    |
|  | 26 crops                                | 22 crops | 17 crops | 7 crops    | 7 crops |
|  | Bu.                                     | Bu.      | Tons     | Tons       | Bu.     |
| O.....                                       | 10.9                                    | .7       | (.61)    | (.58)      | 10.4    |
| M.....                                       | 17.4                                    | 2.4      | (.83)    | (.67)      | 20.7    |
| ML.....                                      | 28.0                                    | 14.1     | (1.17)   | (1.23)     | 33.2    |
| MLrP...                                      | 27.7                                    | 19.3     | (1.25)   | (1.51)     | 35.1    |
| O.....                                       | 11.1                                    | 1.4      | (.58)    | (.52)      | 11.3    |
| R.....                                       | 11.0                                    | 1.7      | (.55)    | (.60)      | 11.4    |
| RL.....                                      | 17.3                                    | 9.8      | (.90)    | (1.01)     | 23.4    |
| RLrP...                                      | 17.6                                    | 16.0     | (.99)    | (1.09)     | 26.6    |
| RLrPK..                                      | 23.6                                    | 21.2     | (1.10)   | (1.54)     | 28.4    |
| O.....                                       | 8.2                                     | 1.0      | (.54)    | (.57)      | 10.4    |

\* Some timothy and red top included in rotation which accounts for hay on unlimed plots.

| Odin field, Marion county, Cisne silt loam |                  |                   |                           |                            |                      |
|--|------------------|-------------------|---------------------------|----------------------------|----------------------|
|  | Corn<br>29 crops | Wheat<br>28 crops | Clover<br>seed<br>6 crops | Sw. cl.<br>seed<br>8 crops | Soybeans<br>26 crops |
|  | Bu.              | Bu.               | Bu.                       | Bu.                        | Bu.                  |
| O.....                                     | 18.0             | 18.3              | .16                       | .03                        | 7.0                  |
| R.....                                     | 20.6             | 10.0              | .29                       | .13                        | 8.2                  |
| RL.....                                    | 24.9             | 18.7              | .74                       | 1.56                       | 10.4                 |
| RLbP...                                    | 25.5             | 24.8              | .74                       | 1.30                       | 10.1                 |
| RLbPK..                                    | 33.5             | 26.8              | .74                       | 2.30                       | 13.9                 |

| Raleigh field, Saline county, Loy and Cisne silt loams |                  |                  |                   |                   |                     |
|--|------------------|------------------|-------------------|-------------------|---------------------|
|  | Corn<br>23 crops | Oats<br>22 crops | Wheat<br>16 crops | Clover<br>8 crops | Soybeans<br>8 crops |
|  | Bu.              | Bu.              | Bu.               | Tons              | Bu.                 |
| O.....   | 13.4             | 10.9             | 5.0               | (.14)             | 7.1                 |
| M.....   | 27.4             | 16.9             | 8.1               | (.28)             | 9.4                 |
| ML.....  | 41.8             | 27.8             | 20.6              | (1.23)            | 15.7                |
| MLrP...  | 43.1             | 29.2             | 22.4              | (1.43)            | 17.2                |
| O.....   | 15.2             | 12.8             | 5.9               | (.09)             | 5.0                 |
| R.....   | 18.4             | 14.2             | 8.0               | (.09)             | 5.7                 |
| RL.....  | 34.6             | 24.3             | 17.0              | (.77)             | 12.1                |
| RLrP...  | 38.2             | 28.6             | 20.1              | (.82)             | 14.9                |
| RLrPK..  | 44.5             | 29.0             | 24.2              | (1.05)            | 14.7                |
| O.....   | 17.6             | 13.1             | 6.4               | (.13)             | 9.8                 |

(Continued)

TABLE 1. SUMMARY OF DATA FOR THE FIRST 100 OBSERVATIONS

TABLE 1. SUMMARY OF DATA FOR THE FIRST 100 OBSERVATIONS

TABLE 1. SUMMARY OF DATA FOR THE FIRST 100 OBSERVATIONS

| Time | Latitude | Longitude | Altitude | Temperature | Humidity |
|------|----------|-----------|----------|-------------|----------|
| 1.0  | 10.0     | 10.0      | 10.0     | 10.0        | 10.0     |
| 1.1  | 10.1     | 10.1      | 10.1     | 10.1        | 10.1     |
| 1.2  | 10.2     | 10.2      | 10.2     | 10.2        | 10.2     |
| 1.3  | 10.3     | 10.3      | 10.3     | 10.3        | 10.3     |
| 1.4  | 10.4     | 10.4      | 10.4     | 10.4        | 10.4     |
| 1.5  | 10.5     | 10.5      | 10.5     | 10.5        | 10.5     |
| 1.6  | 10.6     | 10.6      | 10.6     | 10.6        | 10.6     |
| 1.7  | 10.7     | 10.7      | 10.7     | 10.7        | 10.7     |
| 1.8  | 10.8     | 10.8      | 10.8     | 10.8        | 10.8     |
| 1.9  | 10.9     | 10.9      | 10.9     | 10.9        | 10.9     |
| 2.0  | 11.0     | 11.0      | 11.0     | 11.0        | 11.0     |

TABLE 1. SUMMARY OF DATA FOR THE FIRST 100 OBSERVATIONS

TABLE 1. SUMMARY OF DATA FOR THE FIRST 100 OBSERVATIONS

| Time | Latitude | Longitude | Altitude | Temperature | Humidity |
|------|----------|-----------|----------|-------------|----------|
| 2.1  | 11.1     | 11.1      | 11.1     | 11.1        | 11.1     |
| 2.2  | 11.2     | 11.2      | 11.2     | 11.2        | 11.2     |
| 2.3  | 11.3     | 11.3      | 11.3     | 11.3        | 11.3     |
| 2.4  | 11.4     | 11.4      | 11.4     | 11.4        | 11.4     |
| 2.5  | 11.5     | 11.5      | 11.5     | 11.5        | 11.5     |
| 2.6  | 11.6     | 11.6      | 11.6     | 11.6        | 11.6     |
| 2.7  | 11.7     | 11.7      | 11.7     | 11.7        | 11.7     |
| 2.8  | 11.8     | 11.8      | 11.8     | 11.8        | 11.8     |
| 2.9  | 11.9     | 11.9      | 11.9     | 11.9        | 11.9     |
| 3.0  | 12.0     | 12.0      | 12.0     | 12.0        | 12.0     |

TABLE 1. SUMMARY OF DATA FOR THE FIRST 100 OBSERVATIONS

| Time | Latitude | Longitude | Altitude | Temperature | Humidity |
|------|----------|-----------|----------|-------------|----------|
| 3.1  | 12.1     | 12.1      | 12.1     | 12.1        | 12.1     |
| 3.2  | 12.2     | 12.2      | 12.2     | 12.2        | 12.2     |
| 3.3  | 12.3     | 12.3      | 12.3     | 12.3        | 12.3     |
| 3.4  | 12.4     | 12.4      | 12.4     | 12.4        | 12.4     |
| 3.5  | 12.5     | 12.5      | 12.5     | 12.5        | 12.5     |
| 3.6  | 12.6     | 12.6      | 12.6     | 12.6        | 12.6     |
| 3.7  | 12.7     | 12.7      | 12.7     | 12.7        | 12.7     |
| 3.8  | 12.8     | 12.8      | 12.8     | 12.8        | 12.8     |
| 3.9  | 12.9     | 12.9      | 12.9     | 12.9        | 12.9     |
| 4.0  | 13.0     | 13.0      | 13.0     | 13.0        | 13.0     |



TABLE IV

RESULTS FROM SOIL EXPERIMENT FIELDS LOCATED ON SOIL TYPES  
 PREDOMINANT IN PROBLEM AREA II  
 (Figures indicate average annual acre yields)

| Treatment  | Yields since full treatment was applied |          |          |          |                 |          |
|--|---|----------|----------|----------|-----------------|----------|
| Toledo field, Cumberland county, Cisne silt loam |   |          |          |          |                 |          |
|  | Corn                                    | Oats     | Wheat    | Clover   | Sw. cl.<br>seed | Soybeans |
|  | 20 crops                                | 19 crops | 16 crops | 12 crops | 3 crops         | 3 crops  |
|  | Bu.                                     | Bu.      | Bu.      | Tons     | Bu.             | Tons     |
| O.....   | 22.6                                    | 14.5     | 11.0     | (.24)    | .11             | (.70)    |
| M.....   | 29.5                                    | 18.7     | 12.7     | (.37)    | .24             | (.72)    |
| ML.....  | 41.4                                    | 30.7     | 24.8     | (1.43)   | 2.45            | (1.27)   |
| MLrP...  | 40.7                                    | 31.0     | 25.7     | (1.43)   | 2.42            | (1.21)   |
| O.....   | 16.8                                    | 13.5     | 9.0      | (.16)    | .26             | (.38)    |
| R.....   | 19.3                                    | 14.8     | 10.4     | (.28)    | .53             | (.47)    |
| RL.....  | 26.6                                    | 29.8     | 22.1     | (1.23)   | 1.84            | (.94)    |
| RLrP...  | 26.8                                    | 30.4     | 25.5     | (1.38)   | 1.77            | (1.05)   |
| RLrPK..  | 41.8                                    | 34.9     | 30.8     | (1.83)   | 2.48            | (1.18)   |
| O.....   | 15.7                                    | 15.0     | 8.7      | (.18)    | .19             | (.53)    |
| Sparta field, Randolph county, Loy silt loam     |   |          |          |          |                 |          |
|  | Corn                                    | Wheat    | Soybeans | Oats     | Sw. cl.<br>seed |          |
|  | 17 crops                                | 13 crops | 16 crops | 6 crops  | 9 crops         |          |
|  | Bu.                                     | Bu.      | Bu.      | Bu.      | Bu.             |          |
| O.....   | 12.6                                    | 5.9      | 4.9      | 13.0     | .00             |          |
| M.....   | 16.6                                    | 9.3      | 6.1      | 16.2     | .00             |          |
| ML.....  | 26.7                                    | 19.9     | 13.0     | 36.0     | 1.85            |          |
| MLrP...  | 27.9                                    | 22.1     | 13.2     | 34.3     | 1.53            |          |
| O.....   | 10.9                                    | 5.5      | 3.7      | 8.3      | .00             |          |
| R.....   | 14.5                                    | 5.4      | 4.5      | 11.5     | .00             |          |
| RL.....  | 22.3                                    | 19.3     | 11.1     | 27.6     | 1.39            |          |
| RLrP...  | 21.6                                    | 20.3     | 11.5     | 27.5     | 1.48            |          |
| RLrPK..  | 27.9                                    | 21.1     | 12.5     | 33.1     | 2.24            |          |
| O.....   | 10.0                                    | 4.8      | 3.7      | 13.8     | .00             |          |



UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF PLANT INDUSTRY  
WASHINGTON, D. C.

(This report was prepared under the direction of the Director)

Report on the results of the investigation of the

of the

of the

of the

| Year | Area | Yield | Value | Per cent | Remarks |
|------|------|-------|-------|----------|---------|
| 1911 | 100  | 100   | 100   | 100      |         |
| 1912 | 100  | 100   | 100   | 100      |         |
| 1913 | 100  | 100   | 100   | 100      |         |
| 1914 | 100  | 100   | 100   | 100      |         |
| 1915 | 100  | 100   | 100   | 100      |         |
| 1916 | 100  | 100   | 100   | 100      |         |
| 1917 | 100  | 100   | 100   | 100      |         |
| 1918 | 100  | 100   | 100   | 100      |         |
| 1919 | 100  | 100   | 100   | 100      |         |
| 1920 | 100  | 100   | 100   | 100      |         |
| 1921 | 100  | 100   | 100   | 100      |         |
| 1922 | 100  | 100   | 100   | 100      |         |
| 1923 | 100  | 100   | 100   | 100      |         |
| 1924 | 100  | 100   | 100   | 100      |         |
| 1925 | 100  | 100   | 100   | 100      |         |
| 1926 | 100  | 100   | 100   | 100      |         |
| 1927 | 100  | 100   | 100   | 100      |         |
| 1928 | 100  | 100   | 100   | 100      |         |
| 1929 | 100  | 100   | 100   | 100      |         |
| 1930 | 100  | 100   | 100   | 100      |         |
| 1931 | 100  | 100   | 100   | 100      |         |
| 1932 | 100  | 100   | 100   | 100      |         |
| 1933 | 100  | 100   | 100   | 100      |         |
| 1934 | 100  | 100   | 100   | 100      |         |
| 1935 | 100  | 100   | 100   | 100      |         |
| 1936 | 100  | 100   | 100   | 100      |         |
| 1937 | 100  | 100   | 100   | 100      |         |
| 1938 | 100  | 100   | 100   | 100      |         |
| 1939 | 100  | 100   | 100   | 100      |         |
| 1940 | 100  | 100   | 100   | 100      |         |
| 1941 | 100  | 100   | 100   | 100      |         |
| 1942 | 100  | 100   | 100   | 100      |         |
| 1943 | 100  | 100   | 100   | 100      |         |
| 1944 | 100  | 100   | 100   | 100      |         |
| 1945 | 100  | 100   | 100   | 100      |         |
| 1946 | 100  | 100   | 100   | 100      |         |
| 1947 | 100  | 100   | 100   | 100      |         |
| 1948 | 100  | 100   | 100   | 100      |         |
| 1949 | 100  | 100   | 100   | 100      |         |
| 1950 | 100  | 100   | 100   | 100      |         |
| 1951 | 100  | 100   | 100   | 100      |         |
| 1952 | 100  | 100   | 100   | 100      |         |
| 1953 | 100  | 100   | 100   | 100      |         |
| 1954 | 100  | 100   | 100   | 100      |         |
| 1955 | 100  | 100   | 100   | 100      |         |
| 1956 | 100  | 100   | 100   | 100      |         |
| 1957 | 100  | 100   | 100   | 100      |         |
| 1958 | 100  | 100   | 100   | 100      |         |
| 1959 | 100  | 100   | 100   | 100      |         |
| 1960 | 100  | 100   | 100   | 100      |         |
| 1961 | 100  | 100   | 100   | 100      |         |
| 1962 | 100  | 100   | 100   | 100      |         |
| 1963 | 100  | 100   | 100   | 100      |         |
| 1964 | 100  | 100   | 100   | 100      |         |
| 1965 | 100  | 100   | 100   | 100      |         |
| 1966 | 100  | 100   | 100   | 100      |         |
| 1967 | 100  | 100   | 100   | 100      |         |
| 1968 | 100  | 100   | 100   | 100      |         |
| 1969 | 100  | 100   | 100   | 100      |         |
| 1970 | 100  | 100   | 100   | 100      |         |
| 1971 | 100  | 100   | 100   | 100      |         |
| 1972 | 100  | 100   | 100   | 100      |         |
| 1973 | 100  | 100   | 100   | 100      |         |
| 1974 | 100  | 100   | 100   | 100      |         |
| 1975 | 100  | 100   | 100   | 100      |         |
| 1976 | 100  | 100   | 100   | 100      |         |
| 1977 | 100  | 100   | 100   | 100      |         |
| 1978 | 100  | 100   | 100   | 100      |         |
| 1979 | 100  | 100   | 100   | 100      |         |
| 1980 | 100  | 100   | 100   | 100      |         |
| 1981 | 100  | 100   | 100   | 100      |         |
| 1982 | 100  | 100   | 100   | 100      |         |
| 1983 | 100  | 100   | 100   | 100      |         |
| 1984 | 100  | 100   | 100   | 100      |         |
| 1985 | 100  | 100   | 100   | 100      |         |
| 1986 | 100  | 100   | 100   | 100      |         |
| 1987 | 100  | 100   | 100   | 100      |         |
| 1988 | 100  | 100   | 100   | 100      |         |
| 1989 | 100  | 100   | 100   | 100      |         |
| 1990 | 100  | 100   | 100   | 100      |         |
| 1991 | 100  | 100   | 100   | 100      |         |
| 1992 | 100  | 100   | 100   | 100      |         |
| 1993 | 100  | 100   | 100   | 100      |         |
| 1994 | 100  | 100   | 100   | 100      |         |
| 1995 | 100  | 100   | 100   | 100      |         |
| 1996 | 100  | 100   | 100   | 100      |         |
| 1997 | 100  | 100   | 100   | 100      |         |
| 1998 | 100  | 100   | 100   | 100      |         |
| 1999 | 100  | 100   | 100   | 100      |         |
| 2000 | 100  | 100   | 100   | 100      |         |

Report on the results of the investigation of the

of the

| Year | Area | Yield | Value | Per cent | Remarks |
|------|------|-------|-------|----------|---------|
| 1911 | 100  | 100   | 100   | 100      |         |
| 1912 | 100  | 100   | 100   | 100      |         |
| 1913 | 100  | 100   | 100   | 100      |         |
| 1914 | 100  | 100   | 100   | 100      |         |
| 1915 | 100  | 100   | 100   | 100      |         |
| 1916 | 100  | 100   | 100   | 100      |         |
| 1917 | 100  | 100   | 100   | 100      |         |
| 1918 | 100  | 100   | 100   | 100      |         |
| 1919 | 100  | 100   | 100   | 100      |         |
| 1920 | 100  | 100   | 100   | 100      |         |
| 1921 | 100  | 100   | 100   | 100      |         |
| 1922 | 100  | 100   | 100   | 100      |         |
| 1923 | 100  | 100   | 100   | 100      |         |
| 1924 | 100  | 100   | 100   | 100      |         |
| 1925 | 100  | 100   | 100   | 100      |         |
| 1926 | 100  | 100   | 100   | 100      |         |
| 1927 | 100  | 100   | 100   | 100      |         |
| 1928 | 100  | 100   | 100   | 100      |         |
| 1929 | 100  | 100   | 100   | 100      |         |
| 1930 | 100  | 100   | 100   | 100      |         |
| 1931 | 100  | 100   | 100   | 100      |         |
| 1932 | 100  | 100   | 100   | 100      |         |
| 1933 | 100  | 100   | 100   | 100      |         |
| 1934 | 100  | 100   | 100   | 100      |         |
| 1935 | 100  | 100   | 100   | 100      |         |
| 1936 | 100  | 100   | 100   | 100      |         |
| 1937 | 100  | 100   | 100   | 100      |         |
| 1938 | 100  | 100   | 100   | 100      |         |
| 1939 | 100  | 100   | 100   | 100      |         |
| 1940 | 100  | 100   | 100   | 100      |         |
| 1941 | 100  | 100   | 100   | 100      |         |
| 1942 | 100  | 100   | 100   | 100      |         |
| 1943 | 100  | 100   | 100   | 100      |         |
| 1944 | 100  | 100   | 100   | 100      |         |
| 1945 | 100  | 100   | 100   | 100      |         |
| 1946 | 100  | 100   | 100   | 100      |         |
| 1947 | 100  | 100   | 100   | 100      |         |
| 1948 | 100  | 100   | 100   | 100      |         |
| 1949 | 100  | 100   | 100   | 100      |         |
| 1950 | 100  | 100   | 100   | 100      |         |
| 1951 | 100  | 100   | 100   | 100      |         |
| 1952 | 100  | 100   | 100   | 100      |         |
| 1953 | 100  | 100   | 100   | 100      |         |
| 1954 | 100  | 100   | 100   | 100      |         |
| 1955 | 100  | 100   | 100   | 100      |         |
| 1956 | 100  | 100   | 100   | 100      |         |
| 1957 | 100  | 100   | 100   | 100      |         |
| 1958 | 100  | 100   | 100   | 100      |         |
| 1959 | 100  | 100   | 100   | 100      |         |
| 1960 | 100  | 100   | 100   | 100      |         |
| 1961 | 100  | 100   | 100   | 100      |         |
| 1962 | 100  | 100   | 100   | 100      |         |
| 1963 | 100  | 100   | 100   | 100      |         |
| 1964 | 100  | 100   | 100   | 100      |         |
| 1965 | 100  | 100   | 100   | 100      |         |
| 1966 | 100  | 100   | 100   | 100      |         |
| 1967 | 100  | 100   | 100   | 100      |         |
| 1968 | 100  | 100   | 100   | 100      |         |
| 1969 | 100  | 100   | 100   | 100      |         |
| 1970 | 100  | 100   | 100   | 100      |         |
| 1971 | 100  | 100   | 100   | 100      |         |
| 1972 | 100  | 100   | 100   | 100      |         |
| 1973 | 100  | 100   | 100   | 100      |         |
| 1974 | 100  | 100   | 100   | 100      |         |
| 1975 | 100  | 100   | 100   | 100      |         |
| 1976 | 100  | 100   | 100   | 100      |         |
| 1977 | 100  | 100   | 100   | 100      |         |
| 1978 | 100  | 100   | 100   | 100      |         |
| 1979 | 100  | 100   | 100   | 100      |         |
| 1980 | 100  | 100   | 100   | 100      |         |
| 1981 | 100  | 100   | 100   | 100      |         |
| 1982 | 100  | 100   | 100   | 100      |         |
| 1983 | 100  | 100   | 100   | 100      |         |
| 1984 | 100  | 100   | 100   | 100      |         |
| 1985 | 100  | 100   | 100   | 100      |         |
| 1986 | 100  | 100   | 100   | 100      |         |
| 1987 | 100  | 100   | 100   | 100      |         |
| 1988 | 100  | 100   | 100   | 100      |         |
| 1989 | 100  | 100   | 100   | 100      |         |
| 1990 | 100  | 100   | 100   | 100      |         |
| 1991 | 100  | 100   | 100   | 100      |         |
| 1992 | 100  | 100   | 100   | 100      |         |
| 1993 | 100  | 100   | 100   | 100      |         |
| 1994 | 100  | 100   | 100   | 100      |         |
| 1995 | 100  | 100   | 100   | 100      |         |
| 1996 | 100  | 100   | 100   | 100      |         |
| 1997 | 100  | 100   | 100   | 100      |         |
| 1998 | 100  | 100   | 100   | 100      |         |
| 1999 | 100  | 100   | 100   | 100      |         |
| 2000 | 100  | 100   | 100   | 100      |         |

TABLE V

RESULTS FROM SOIL EXPERIMENT FIELDS LOCATED ON SOIL TYPES  
PREDOMINANT IN PROBLEM AREA III

(Figures indicate average annual acre yields)

| Treatment                       | Yields since full treatment was applied |                   |                            |                     |                            |                     |
|---------------------------------|---|-------------------|----------------------------|---------------------|----------------------------|---------------------|
| Enfield field, White county     |   |                   |                            |                     |                            |                     |
|                                 | Corn<br>20 crops                        | Oats<br>21 crops  | Wheat<br>16 crops          | Clover<br>11 crops  | Sw. cl.<br>seed<br>4 crops | Soybeans<br>5 crops |
|                                 | Bu.                                     | Bu.               | Bu.                        | Tons                | Bu.                        | Bu.                 |
| O.....                          | 16.0                                    | 12.4              | 6.2                        | (.13)               | 0                          | 4.3                 |
| M.....                          | 23.6                                    | 17.3              | 9.4                        | (.20)               | 0                          | 5.9                 |
| ML.....                         | 37.5                                    | 29.2              | 21.7                       | (1.48)              | 1.68                       | 12.8                |
| MLrP...                         | 39.5                                    | 30.1              | 24.0                       | (1.72)              | 1.30                       | 13.3                |
| O.....                          | 16.6                                    | 12.3              | 7.3                        | (.10)               | 0                          | 3.6                 |
| R.....                          | 19.6                                    | 13.3              | 8.1                        | (.13)               | 0                          | 3.6                 |
| RL.....                         | 32.4                                    | 27.3              | 19.0                       | (.96)               | 1.77                       | 10.4                |
| RLrP...                         | 34.0                                    | 30.3              | 23.6                       | (1.06)              | 1.25                       | 10.9                |
| RLrPK..                         | 39.7                                    | 33.6              | 26.4                       | (1.58)              | 1.63                       | 11.2                |
| O.....                          | 22.9                                    | 16.4              | 9.5                        | (.19)               | 0                          | 6.4                 |
| Unionville field, Massac county |   |                   |                            |                     |                            |                     |
|                                 | Corn<br>21 crops                        | Wheat<br>17 crops | Cotton<br>seed<br>13 crops | Cowpeas<br>12 crops | Soybeans<br>9 crops        |                     |
|                                 | Bu.                                     | Bu.               | lbs.                       | Tons                | Tons                       |                     |
| O.....                          | 15.2                                    | 6.2               | 171                        | (.65)               | (.80)                      |                     |
| M.....                          | 21.4                                    | 8.3               | 284                        | (.75)               | (.99)                      |                     |
| ML.....                         | 30.5                                    | 15.1              | 464                        | (1.05)              | (1.72)                     |                     |
| MLrP...                         | 32.1                                    | 18.0              | 479                        | (1.25)              | (1.74)                     |                     |
| O.....                          | 13.3                                    | 6.4               | 144                        | (.45)               | (.73)                      |                     |
| R.....                          | 16.4                                    | 7.2               | 130                        | (.54)               | (.73)                      |                     |
| RL.....                         | 32.4                                    | 15.0              | 233                        | (.60)               | (1.33)                     |                     |
| RLrP...                         | 35.7                                    | 18.9              | 250                        | (.68)               | (1.41)                     |                     |
| RLrPK..                         | 41.2                                    | 21.3              | 442                        | (.86)               | (1.63)                     |                     |
| O.....                          | 13.5                                    | 7.2               | 152                        | (.61)               | (.65)                      |                     |

(Continued)



TABLE V

RESULTS FROM SOIL EXPERIMENT FIELDS LOCATED ON SOIL TYPES  
 PREDOMINANT IN PROBLEM AREA III  
 (Figures indicate average annual acre yields)

| Treatment                        | Yields since full treatment was applied |          |          |          |         |                 |
|----------------------------------|---|----------|----------|----------|---------|-----------------|
| West Salem field, Edwards county |   |          |          |          |         |                 |
|                                  | Corn                                    | Oats     | Wheat    | Soybeans | Clover  | Sw. cl.<br>seed |
|                                  | 21 crops                                | 21 crops | 20 crops | 20 crops | 7 crops | 7 crops         |
|                                  | Bu.                                     | Bu.      | Bu.      | Bu.      | Tons    | Bu.             |
| O.....                           | 29.4                                    | 8.7      | 2.3      | 4.7      | (.09)   | .19             |
| ML.....                          | 28.0                                    | 24.7     | 11.4     | 9.2      | (.52)   | 1.29            |
| ML.....                          | 31.6                                    | 29.7     | 15.4     | 10.3     | (.86)   | 2.60            |
| MLrP...                          | 34.3                                    | 32.2     | 21.9     | 11.4     | (1.28)  | 2.13            |
| l.....                           | 14.4                                    | 16.3     | 7.6      | 6.2      | (.30)   | .48             |
| RL.....                          | 20.5                                    | 19.1     | 9.2      | 7.6      | (.44)   | .75             |
| RL.....                          | 23.4                                    | 26.5     | 12.9     | 8.8      | (.78)   | 2.23            |
| RLrP...                          | 29.1                                    | 33.9     | 21.0     | 10.8     | (1.14)  | 2.28            |
| RLrPK..                          | 37.8                                    | 37.3     | 26.6     | 12.4     | (1.59)  | 2.78            |

<sup>1</sup> Four tons of limestone were applied by mistake in 1912; no further applications were made.

O.....No treatment.  
 M.....Manure.  
 ML.....Manure and lime.  
 MLrP...Manure, lime and rock  
 phosphate.

R.....Residues.  
 RL.....Residues and lime.  
 RLrP...Residues, lime and  
 rock phosphate.  
 RLrPK..Residues, lime, rock  
 phosphate and potash.

# THE UNIVERSITY OF CHICAGO DIVISION OF THE PHYSICAL SCIENCES DEPARTMENT OF CHEMISTRY

A REPORT ON THE PROGRESS OF THE RESEARCHES OF THE  
 DIVISION OF THE PHYSICAL SCIENCES, DEPARTMENT OF CHEMISTRY, FOR THE YEAR 1955

| RESEARCHERS  |        |        |        |        |        |
|--------------|--------|--------|--------|--------|--------|
| NAME         | DEGREE | DEGREE | DEGREE | DEGREE | DEGREE |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |
| ALLEN, R. H. | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  | Ph.D.  |

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